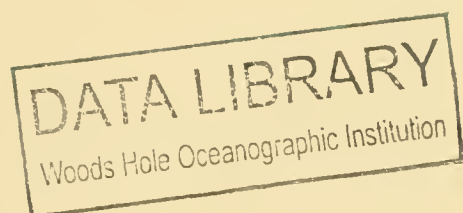
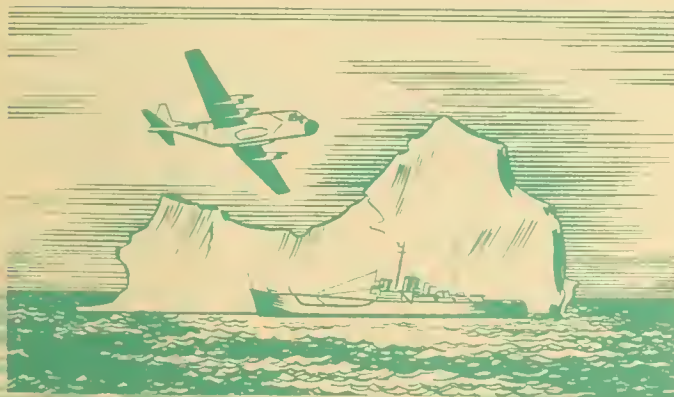


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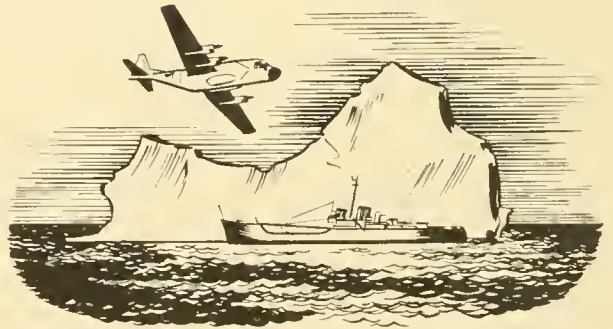


OCEANOGRAPHY OF THE LABRADOR SEA IN THE  
VICINITY OF HUDSON STRAIT IN 1965



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UNITED STATES COAST GUARD OCEANOGRAPHIC UNIT



# REPORT No. 12 CG 373-12

## OCEANOGRAPHY OF THE LABRADOR SEA IN THE VICINITY OF HUDSON STRAIT IN 1965

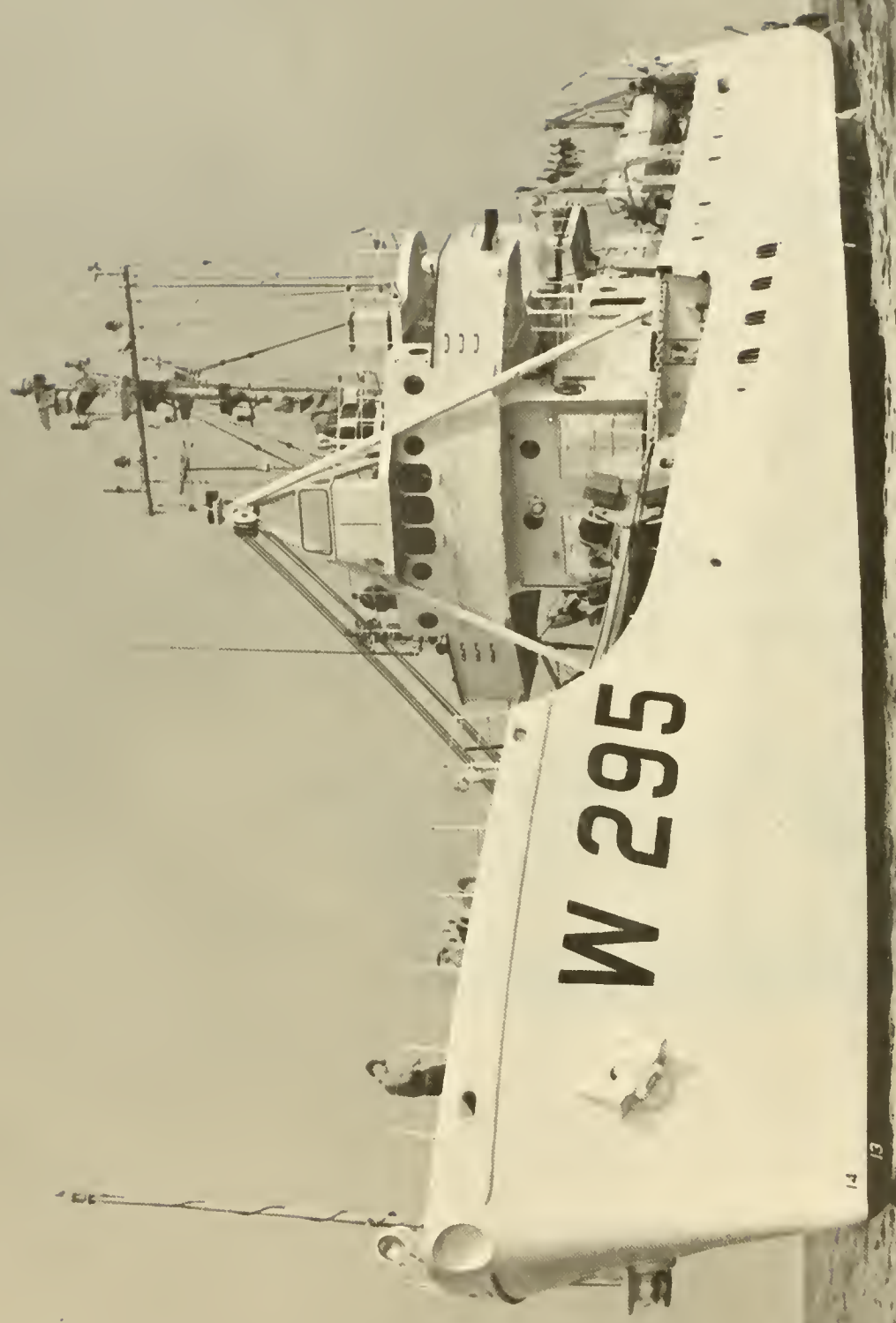
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*David A. McGill*

*Nathaniel Corwin*



WASHINGTON, D.C. ⚓ MARCH 1967



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## Abstract

From the data collected on the Labrador Current Expedition, July–August 1965, there is indicated substantiation of the current system defined by Smith (1937), “Marion Expedition.” The data further shows that Hudson Strait exercises a control on the Labrador Current to the extent that a characteristic water type is formed and pulsed eastward by tidal variations through the strait entrance, forming the cold core and main flow of the Labrador Current. Contributions from the Baffin Land Current, flowing westward into Hudson Strait along the northern shore, appear to form one of the mixing constituents; with Hudson Bay acting as a modifier tending to warm and dilute the waters prior to their outflow along the southern shore of Hudson Strait.



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# Contribution to and Effect of the Hudson Strait Outflow on the Labrador Current

By RONALD C. KOLLMMEYER, U.S. Coast Guard

## INTRODUCTION

An oceanographic expedition to the western Labrador Sea, under the control of the International Ice Patrol Section of the Coast Guard Oceanographic Unit, Washington, D.C., was conducted during July and August of 1965. The purpose of the expedition was to gather quantitative physical and chemical data from the upper reaches of the Labrador Current. The survey trackline and station locations are shown in figure 1.

Knowledge of the circulation of the upper reaches of the Labrador Current, and its relationship to the Hudson Strait entrance, Baffin Land Current, and the western Labrador Sea has been primarily derived from Smith (1937). His studies were based on the various cruises of the Coast Guard cutters MARION and GENERAL GREENE. This work has formed the heart of the published information concerning the area. In recent years, Dunbar (1951) has discussed the entire region, including the area west of the Hudson Strait entrance and cited the lack of quantitative knowledge in the Baffin Bay, Labrador Sea, and Hudson Strait areas.

The main circulation features postulated by Smith (1937) are shown in figure 2. The primary interest of the present investigation conducted by the International Ice Patrol, centers around the entrance to Hudson Strait. As can be seen, Smith depicts much of the Baffin Land Current being deflected into Hudson Strait both north and south of Resolution Island. He also shows a large outpouring from Hudson Strait just north of Cape Chidley. The area outlined in figure 2 could be tagged as the "birthplace" of the Labrador Current. Smith (1937) points out that in this area three water masses join to form the southward flowing Labrador Current which can be followed down to the southern tip of the Grand Banks of Newfoundland. He envisioned the Baffin Current, from the north, joining and mixing

with both the Hudson Strait outflowing and the recurved West Greenland Current, resulting in the formation of the characteristic Labrador Current. This joining of the water masses accounted for the two distinct bands or filaments of the current; an inshore portion, cold and low in salinity, and an offshore portion of warmer more highly saline water moving swiftly along the shelf break.

Smith postulated the circulation in and out of Hudson Strait from iceberg and sea ice observations. He noted the lines of icebergs moving into the strait on the northern side and iceberg movement out of the strait along the southern limits, off Cape Chidley. He also noted the rather diffuse movement of the icebergs to the east of Resolution Island indicating a definite weakening of the southward flow in that area. This information was supported by many oceanographic stations to the east of Resolution Island, but only four stations across the entrance to Hudson Strait. These four stations were insufficient to describe the property distribution and did not permit any detailed examination of the quantitative transport and exchange through the strait.

No data was obtained by Smith concerning the water exchange just north of Resolution Island. His data north of this area, at the latitude of Loks Land, shows that the Baffin Land Current narrows, accelerates and at least in part appears to turn into Hudson Strait through Gabriel Strait.

Velocity values calculated by Smith show a much stronger current flowing south of Hudson Strait than was found to the north. This acceleration was attributed to both the Hudson Strait discharge and the convergence of the West Greenland Current. Smith also speculates that the land drainage from Hudson Bay Basin alone indicates that the discharge through Hudson Strait probably exceeds the inflow.

Campbell (1958) presented the most comprehensive study to date of the circulation in Hudson Bay, Fox Basin, and Hudson Strait. It was quan-

titative in nature and presented the detailed circulation features of Hudson Strait which were speculated on by Smith (1937). Campbell's data were obtained during the autumn 1955 and summer 1956 and shows the seasonal influences on the areas. This work provides the complementary data needed to connect the circulation and interchanges occurring across the entrance to Hudson Strait as found during the subject 1965 expedition.

The generalized circulation picture for the northwestern part of the Labrador Sea is quite clear. The oceanographic sections occupied during the 1965 expedition were specifically designed to describe in detail the contributions of the water masses that make up the Labrador Current and to quantitatively describe the interchange at the Hudson Strait entrance.

Recent findings as to seasonal and annual variations in temperature and volume flow of the Labrador Current has initiated new thoughts concerning spring iceberg threat predictions on the Grand Banks. Fluctuations in the heat and volume transport of the Labrador Current, coupled with the variations in available icebergs during the spring, tend to cause the iceberg threat of one year to differ sharply from another. Iceberg mortality during transit from north to south, particularly along the coast of Labrador, is greatly influenced by the temperature and velocity of the Labrador Current. This is particularly true in the current area west of the swiftest flowing boundary filament, flowing along the shelf break, which divides the cold, low salinity water to the west from the warm, saltier water of the Labrador Sea. This inshore or shelf portion of the Labrador Current acts as the deep freeze which conveys the icebergs south. Water properties in this current band are characteristically cold, less than  $2^{\circ}\text{C}$ ., and low in salinity, less than 34.0‰. This property combination results in lighter water than that found in the more saline Labrador Sea and accounts for the boundary or frontal zone which generally lies along the shelf break. These horizontal property differences, between the coastal water and the Labrador Sea, sets up the west to east pressure gradient which results in the southward transport along the western boundary of the Labrador Sea. Smith (1937) points out that variations in the amount of light, low salinity water available along the Labrador coast will cause variations in the velocity of both the boundary current filaments and the inshore water mass that carries the icebergs

south. Likewise the temperature of this water not only influences the current velocity but also dictates the deterioration rate of the icebergs as they are transported south. An understanding of the origin and control of this characteristic water mass will ultimately allow perfection of ice season severity predictions when combined with knowledge of the count of available icebergs which are to be transported south.

## NARRATIVE

The oceanographic expedition was conducted by the CGC EVERGREEN, a 180-foot buoy tender class oceanographic vessel, in support of the International Ice Patrol.

The expedition departed Boston, Mass., on 19 July 1965, and arrived at the first oceanographic station (9409) off the coast of South Wolf Island, Newfoundland, on 25 July 1965. The stations shown on figure 1, were occupied in a serial manner, terminating on 13 August 1965, at station number 9508 in the center of the southern end of the Labrador Sea.

Sea ice along the coast of Labrador and Baffin Island offered no obstacle to the survey work. Most of the ice fields encountered averaged from two-tenths to four-tenths and generally the vessel's speed of advance was maintained at 10 knots making good the base course. Two heavy fields of ice were encountered where the ice had been packed in strings up to 15 feet thick by the wind. The EVERGREEN was delayed approximately 2 hours by these floes which were mostly rotten ice and in general easily pushed aside or cracked apart. Most of this ice was encountered off Cape Dyer, Baffin Island, on the northern most section occupied. No accurate count was kept of the icebergs sighted but a gross estimate is that 150 icebergs, mostly grounded, were passed and sighted either visually or on radar.

Oceanographic stations generally consisted of electronic bathythermograph lowerings, Nansen casts, and bottom sampling. One hundred Nansen casts, sixty-nine core or grab samples, and one hundred forty-five electronic bathythermograms were obtained. The distribution of these samplings are shown in figure 1.

Teflon-lined water sampling bottles of the Nansen type, manufactured by the Ballauf Manufacturing Co. or the United Machine Co., were used during the expedition. Temperatures were measured with protected deep sea reversing



thermometers manufactured by Richter and Wiese, Kahl Scientific Instrument Corp., and Walter H. Kessler Co., Inc. The temperatures were obtained from paired averages and are considered accurate to  $\pm 0.01^\circ \text{C}$ . The salinity of each sea water sample collected was measured with an RS-7A inductive salinometer manufactured by Industrial Instruments Corp. It is considered that the precision of measurement was within  $\pm 0.005\%$  and that the accuracy of the reported salinities is  $\pm 0.01\%$ . Water samples were also obtained for dissolved oxygen analysis by the Modified Winkler method according to the method described by Jacobson et al. (1950). Additional water samples were bottled and frozen for later analyses of the nutrient content by David A. McGill of the Woods Hole Oceanographic Institution, and the results are included as a separate paper.

The temperature distribution of the water in the upper 400 meters was examined just prior to making a Nansen cast and at many locations between Nansen stations. This was accomplished by using a Hytech Corp., electronic bathythermograph (ELBT) Model 480 MOD 1.

A standard Phleger, 1 foot, gravity corer was used to obtain samples of the sediments at selected locations. In areas of rock and sand bottoms, clamshell grabbers and orange peel bucket samples were used. These samples are still being analyzed, and therefore the data are not presented herein.

## DATA TREATMENT

The temperature and salinity data obtained at each station were processed on the Digital Equipment Corp. PDP-5 computer as discussed by O'Hagen (1964), and Morse and O'Hagen (1964). This was accomplished shortly after the completion of each station. Values of sigma-t and dynamic heights based on the 1,000-decibar level were determined at each sample depth. Computer interpolation for the Ice Patrol standard levels was performed according to Kollmeyer (1964).

The oceanographic work was under the direction of Lt. Comdr. Ronald C. Kollmeyer, USCG, who was assisted by Mr. Thomas C. Wolford, oceanographer, Lt. (jg.) John Goras, USCGR, and Mr. John Flick, electronic technician. Technical assistants were William H. Harrell, sonarman first class, David J. Wood, sonarman second class, Edward S. Olszewski, sonarman second class, William F. Heller, aerographer's mate sec-

ond class, and James D. Brower, aerographer's mate third class.

Dynamic heights of the sea surface were summed using both observed specific volume anomaly values and the interpolated standard depth values. Determinations of dynamic heights in shallow water were performed in the manner described by Helland-Hansen (1934). This method assumes that level isosteric surfaces extend from the water-sediment interface, on the continental slope, into the bottom of a point directly below the next serial station. This method allows the extension of the pressure surfaces, related to the 1,000-decibar level of no motion, above the shelf as far as the coast. Facilitation of these shallow water computations is accomplished by constructing a property section, along a line of stations, for both temperature and salinity. The isotherms and isohalines are then extended or extrapolated to points along the bottom. Where doubt existed as to isopleth contours near the bottom, vertical distribution curves of temperature and salinity for the questioned stations were drawn and the required bottom data extrapolated. By this procedure, temperature and salinity values at the bottom, beneath each station, were established as well as values at significant points of bottom topography slope changes. Data points were then available for temperature and salinity values at the standard depths and along the bottom to supplement the observed values, thereby providing a close approach to completely describing the water column from the surface to the bottom or 1,000 meters as the case may be. All of the data points of temperature and salinity were then processed in the computer and the relative dynamic height at each value point determined.

The depth values of the 26.2 and 27.0 sigma-t surfaces were interpolated by computer from the complete data array. In addition, the nitrite ( $\text{NO}_2 - \text{N}$ ) concentrations at the depth of these sigma-t surfaces were obtained by computer interpolation thus allowing preparation of isentropic charts with nitrite concentration contours. They are presented in a subsequent section.

Volume flow computations were accomplished by a computer program specifically written to provide transport information through vertical property sections. The program provides volume flow information through solenoids which subdivide a property section into small rectangles. The solenoids are bounded by the data obtained from

adjacent stations at the various standard depth levels as shown in figures 3 and 4. The volume flow information was calculated through each solenoid using the following equations:

$$\bar{V} = v_m \times A \quad (1)$$

$$v_m = \frac{10(\bar{D}_A - \bar{D}_B)}{fL} \quad (2)$$

$$A = d \times L \quad (3)$$

$\bar{V}$  = volume flow

$v_m$  = mean water velocity within the solenoid

$A$  = area of solenoid bounded by station location and standard depths

$(\bar{D}_A - \bar{D}_B)$  = difference between the mean dynamic height values of adjacent stations, based on 1000-decibar level, at a point between the upper and lower standard depth values bounding the solenoid

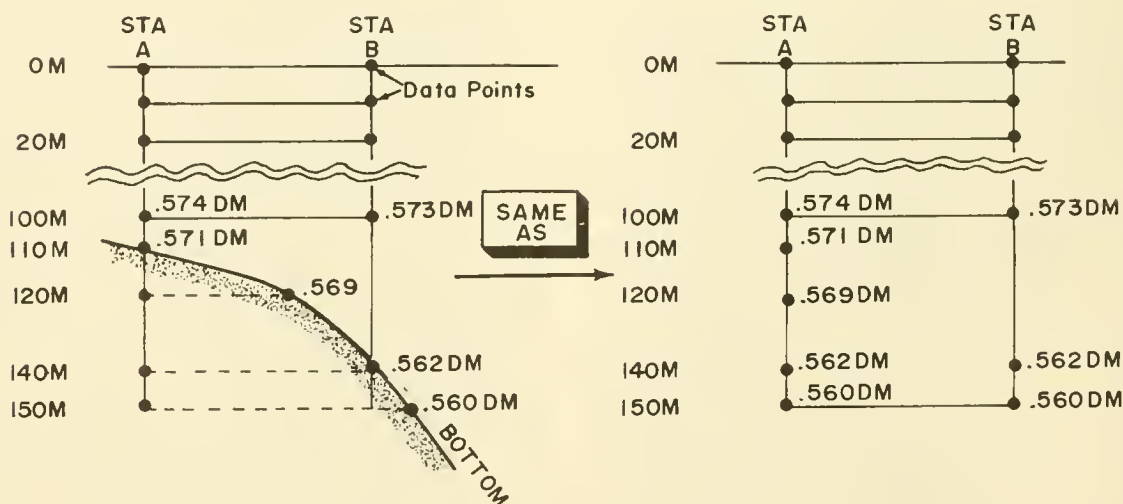
$f$  = coriolis force

$L$  = distance between adjacent stations

$d$  = vertical distance between the standard depth values bounding the solenoid

Combining equations (1), (2), and (3):

$$\bar{V} = \frac{10(\bar{D}_A - \bar{D}_B)d}{f} \quad (4)$$



The volume flow calculations are now independent of the distance between adjacent stations. This allows simplified volume flow computations through solenoid located along the bottom in shallow water. Data points along the bottom at significant slope changes within a particular solenoid can therefore be treated like data obtained from the nearest station higher on the slope as shown below.

The computer receives the previously determined dynamic height values at the standard depth boundaries and any values in between for the particular solenoid being examined. It then, computes the mean dynamic height within the standard depth boundaries for each of the two stations bounding the solenoid and thus arrives at a figure for  $(\bar{D}_A - \bar{D}_B)$ . Equation (4) is then automatically solved and the volume flow results with the dimensions of  $10^6 \text{m}^3/\text{sec}$ . The direction of flow is indicated by a plus or minus sign in the answer.

By the above-described process, an entire section can be broken into the desired solenoids and the entire volume flow, magnitude and direction can be determined. Summations of the solenoids by direction of transport or other unique property may be made, thus allowing the computation of salt and heat transports. More detail in the resulting transport description can be obtained by closer vertical sample spacing and by closer station spacing thereby resulting in a greater number of solenoids within a given section.

Property transport of heat and salt were computed for each solenoid in the survey sections using the following equations:

$$Q_t = \bar{V} \times T_m \quad (5)$$

where

$Q_t$  = heat transport °C. m<sup>3</sup>/sec

$T_m$  = mean value of the temperature within the solenoid

$V$  = volume flow

and

$$M_s = \bar{V} \times S_m \times \rho_m \quad (6)$$

where

$M_s$  = salt transport (10<sup>8</sup>) gms/sec

$S_m$  = mean value of the salinity within the solenoid

$\rho_m$  = M<sup>3</sup> density of seawater

$V$  = volume flow

Equation (5) is not a true heat flow calculation, however this method is representative of the heat and allows intercomparison of the heat flow through the various sections. The mean temperatures are arrived at for each solenoid by using a weighted mean obtained from the isotherm distribution of the property sections. Equation (6) gives the grams of salt transported through each solenoid. The mean salinity was determined, similar to the mean temperature, by using the salinity distribution sections. A mean density ( $\rho_m$ ) of 1.03 gms/cm<sup>3</sup> was selected to speed computations. Actual densities range from 1.025 gms/cm<sup>3</sup> to 1.028 gms/cm<sup>3</sup>. However, the error in rounding to 1.03 gms/cm<sup>3</sup> is negligible compared to the estimated error of 10 percent for the overall procedure.

Figures 3 and 4 show the diagrammatic construction of a volume-salt-heat transport section. Each solenoid contains 6 values resulting from the above calculations. These values are: direction of movement, volume flow, mean temperature, mean salinity, heat flow, and salt transport. This allows the summing of the data contained in the various solenoids according to the desired presentation or analyzation of the data. For example; in this paper direction of movement was considered along with particular water characteristics. Solenoids which contained water at a temperature of less than 2.0° C. and a salinity of less than 34.3‰ were summed. These solenoids are

emphasized in figures 3 and 4 by solid outlines for southward-moving water and dashed for northward-moving water.

The computer reduction of the volume flow data eliminates the traditional subjective velocity curve drawings and makes the sections more comparable because of their uniformity of treatment. The method is limited by the recognized errors of dynamic height computations in addition to the errors and assumptions included by working in shallow water. It is believed however, that this procedure is as accurate as any indirect method presently in use.

## ISENTROPIC ANALYSIS

Analysis of surfaces of equal entropy was attempted for the area adjacent to the entrance to Hudson Strait. Sigma-t surfaces, although not coincident with true isentropic surfaces, are considered a close approach for purposes of analysis. Kollmeyer (1966), depicted the core of the Labrador Current using this method and showed pictorial differences between presenting isotherms at horizontal depth levels versus presenting them on sigma-t surfaces. The isotherms on the sigma-t surfaces clearly displayed the cold core of the Labrador Current whereas the horizontal isotherm plots showed only a west-to-east temperature gradient. A similar treatment of the data is attempted herein, except for the fact that nitrite ( $NO_2 - N$ ) data are contoured on the sigma-t surfaces in lieu of temperature data. In addition, the topography of the sigma-t surface is shown.

According to Montgomery (1938), the movement of the water masses are defined for flow direction by the contours of the property distribution. Nitrites were chosen as the property to be contoured because they are independent of the density and the properties which determine density, and form an independent chemical property to examine on the surface. There seems to be some relationship between the maximum nitrite concentration and the temperature minimum zones in the area of analysis. Figure 5 shows the depth of location of the temperature minimum and the depth of the nitrite maximum. In the areas of the cold cores of the Labrador Current, the nitrite maximum is located well below the minimum temperature. In the warmer areas, on the eastern edges near the Labrador Sea and the near-shore water, the minimum temperatures generally coin-



cide with the maximum nitrite concentrations. No nitrite minimum is indicated within the cold cores. This separation between the temperature minimum and nitrite maximum within the colder water core is of interest because it adds still another property anomaly that may be used in the study of the cold water forming the Labrador Current. At present, the only inference that can be made to the above-mentioned phenomena is that the cold core(s) of the Labrador Current appear to be intrusive in the area. That is to say that the cold cores are filaments moving through water on the shelf which could be considered resident water experiencing slower movement. This resident water is more at equilibrium with the environmental and biological conditions than the intrusive water. Oceanic areas generally exhibit a nitrite maximum at or just below the thermocline at about 75 meters according to Sverdrup, et al. (1942). This is the case, as can be seen in figure 5, for all the waters except the cold cores of the Labrador Current.

In those sections which describe the Baffin Land Current to the north (stations 9477-9508) the nitrite maximum occurs above the temperature minimum; however, close examination of the data in this area discloses that due to the large amounts of cold homogenized water, the true temperature minimum is not clearly defined. Furthermore, it can be seen that the nitrite maximum actually lies just below the thermocline as in all the other areas shown in figure 5 with the exception of the cold core of the Labrador Current.

The nitrite concentrations generally varied widely in vertical and horizontal distributions and, except for a few instances, nitrite was never completely absent.

Figure 6 is a plot of the 26.2 sigma-t surface showing both the depth contours of the surface and the nitrite concentrations. The striking slope of the sigma-t surface clearly defines the limits of the water with the particular density of 1.0262 gms/cm<sup>3</sup>. A sea surface intersection with the sigma-t surface tends to indicate the movement of the water masses into Hudson Strait on the northern side and out the southern side. No water of density of 1.0262 gms/cm<sup>3</sup> was found in the section running east of Resolution Island. This indicates the lack of any flow connection, above the 25-meter level, between the water lying to the north and south of Resolution Island.

The 26.2 sigma-t surface north of Resolution Island intersects the sea surface to the east and south

but is relatively flat in topographic description to the west. There exist an almost uniform depth level of about 25 meters which extends west to the coast of Baffin Island.

To the south of Resolution Island the 26.2 sigma-t surface slopes much more steeply in the strait entrance and along the Labrador coast. Intersection of the sigma-t surface with the bottom can be seen near the Labrador coast. The topography, in this area, goes to greater depths and is not flat like that to the north. The surface extends below 100 meters in an area just off the mouth of Hudson Strait and in general lies below the 50-meter depth level. This great difference in depth level, north and south of Resolution Island, indicates that greater quantities of lighter water seem to be present south of Resolution Island.

The great slope of the sigma-t surfaces imply severe slopes of the isobaric surfaces and qualitatively indicate the circulation in the area. The contours of the nitrite concentrations tend to support these circulation patterns.

It is quite apparent from figure 6 that the water flow is into Hudson Strait north of Resolution Island and out of the strait south of Resolution Island with no north-south flow connection shown for water of this density. The broad contours of nitrites to the north are nondescriptive because of their uniformity. To the south, however, there exists a tongue of higher nitrites emanating from inside the point of Cape Chidley and flowing out in a broad pattern. Somewhat isolated to the east is a second nitrite concentration giving indication of a pulselike structure in the flow pattern coming from the strait. This pulselike structure can also be observed in the depth of the sigma-t surface coincident with this higher nitrite concentration pulse. The topography here dips to a depth in excess of 100 meters, thus indicating a slug or pulse of lighter water moving through the area.

Figure 7 shows the 27.0 sigma-t surface. Again, nitrite concentrations as well as the topography are contoured on the sigma-t surface. This surface intersects the sea surface in only a limited area just to the northeast of Resolution Island. This is an area of flow direction transition where lighter water, on the left side of the flow pattern moving into Hudson Strait, is in close proximity with the heavier water flowing south, just east of Resolution Island. Here again the general flow patterns

are shown in both the slope of the sigma-t surface and the nitrite distribution. The 27.0 sigma-t surface slopes in varying degrees, from a level of 50 meters, westward to intersect with the bottom along both the Baffin Island and Labrador coasts. To the east of Resolution Island, the surface remains quite level, at 50 meters, to within 20 miles of the coast and then abruptly deepens southward to a depth in excess of 250 meters. To the north of Resolution Island, the surface dips slightly below 150 meters before intersecting the bottom. Here again is the indication of the existence of lighter water to the south of the entrance to Hudson Strait. Lesser amounts of this light water exists to the north of the strait entrance and is virtually absent due east of Resolution Island.

The circulation depicted by the nitrite concentration supports the flow pattern shown by the sigma-t surface slope. Water movement at these depths are indicated as being into the strait on the north, and south of Resolution Island and out in the center of the entrance between Resolution Island and Cape Chidley. The outflow of water appears again to assume a slug or pulslike structure described by both the nitrite distribution and the contours of the sigma-t depth topography. In this case the water moving out of the entrance appears to be of minimum nitrite concentration, deflecting or distorting the water of higher concentrations which are flowing from the north, immediately to the east of Resolution Island.

## DYNAMIC HEIGHT CHARTS

A dynamic height chart of the area adjacent to the entrance to Hudson Strait was constructed to provide quantitative current information. This chart is presented as figure 8. As previously mentioned, all dynamic heights are computed relative to the 1,000-decibar level of assumed no motion. No direct current measurements are available in this area to provide a comparison with absolute values. The concept of "relative" currents is useful however; because the question of relative contributions of the several water masses in the area to the Labrador Current was the primary concern of the expedition.

One basic assumption required in the dynamic treatment of oceanographic data is that of steady state. That is, conditions are such in the area of consideration, that the various forces acting on the water are in a dynamic equilibrium. In the steady state situation, an adequate description of

the pressure distribution, resulting from the mass distribution, will describe the water movements relative to a reference level.

There exists great doubt as to the existence of any equilibrium attainment of the forces in the vicinity of the entrance of Hudson Strait because of tides and the resulting tidal currents. These tidal movements result in water being moved independent of the more discrete pressure-mass distribution forces. The tides in this area are semi-diurnal and relatively equal. With a discrete pressure-mass distribution force impressed on the oscillating tidal movement, the resulting net movement would be governed by the direction of the pressure-mass distribution force. It would be expected that this long term net movement would be reflected in a description of the mass distribution obtained from the point sampling of temperature and salinity. A major redistribution of the mass features in the entrance of Hudson Strait by the tidal currents seems unlikely because of the directional changes of the tidal currents every 6 hours. With the quantities of water present, the time frame for redistribution appears much too short.

The current and volume flow data calculated from the mass distribution in the area would certainly not be representative of the instantaneous particle movement, but should be representative of the longer period movement tendencies. These tendencies depicted by the mass distribution should be comparable between the sections of the survey area. With this assumption in mind, the dynamics of the area are presented and extended, in a later section, to include volume flow computations.

Figure (8) shows the surface circulation in and near the entrance to Hudson Strait. The circulation, deduced by the dynamic method matches quite well with qualitative flow depicted from the isentropic distributions. A broad low-velocity Baffin Land current flows from the north towards the entrance to Hudson Strait. A turning to the right of the inshore filaments occurs, resulting in water movement into the strait north of Resolution Island. A convergence of the broad current band located further offshore occurs along with a commensurate acceleration. This jet then flows in to Hudson Strait just to the south of Resolution Island. This is exactly what was indicated on the 27.0 sigma-t level shown in figure (7). The 26.2 sigma-t level, however, showed a shallow flow into the strait north of Resolution Island.



The section east of Resolution Island has relatively flat topography except for the first two stations near the island. The surface waters seem to meander from offshore in towards the island with the 971.0 dynamic meter contour demarking the outboard extremity of the convergence mentioned above. Waters further offshore make a slow circuitous trip towards the strait and then turn back to the east under the influence of the outflow of Hudson Strait. The east-west section off Resolution Island is the area where Smith (1937) cited the delay or hesitation in the movement of icebergs during their trip south.

To the south of Resolution Island, in the strait entrance, high speed currents are displayed. The northern one-third of the strait has the strong westerly current discussed above while the southern two-thirds has a very strong eastward outflow in the center and slight reversal to the west around the islands just to the north of Cape Chidley. A strong outflow in the passage between Cape Chidley and the offshore island is also indicated.

The water flowing out of the strait turns sharply south and commences its passage towards the Grand Banks. The central jet of water passing out of the strait diverges as it turns south. This divergence continues until a broad flat area is developed in the southernmost section of figure 8. To the east of this divergence, offshore waters from the Western Labrador Sea converge towards, and are entrained with, the fast-moving filaments of the current. To the west, the dynamic height of the stations along the coast require the topographic contours to be drawn into the coast. This is an unusual situation and points up the limitations of the dynamic method. In the area just to the east of Cape Chidley, the contours also turned severly clockwise and intersect the coast. In the center of this area, the 971.3 dynamic meter contour forms a loop indicating a circular path or eddy in the water. The area thus described by the contour represents a hill, elevated above the waters to the east and south and violated steady state requirements for geostrophic flow. The light water is definitely present, as indicated in the property sections shown later herein, and should ultimately flow towards a lower geopotential level if the assumption of hydrostatic equilibrium at 1000 meters holds. This means that cross isobaric transport will probably take place before geostrophic flow along the isobars is set up.

Without any direct current measurements in this area, reference must again be made to the isentropic

charts of figures 6 and 7 for comparison. It can be observed that the flow of water, as depicted by the nitrite concentrations, on both the 26.2 and 27.0 sigma-t surfaces, indicate water movement to be generally in a southeasterly direction off the Hudson Strait entrance. This tends to support the dynamics shown in figure 8. To be noted here is the expected coincidence of the 971.3 dynamic meter line which describes an eddy off Cape Chidley, with the depression in the 27.0 sigma-t surface thus indicating the large slug or pulse of light water present in the area.

There is a distinct possibility that this pulse-like structure of the water is a direct result of pumping action caused by the tides. As pointed out above, the pressure-mass distribution indicates a force moving water out of the strait entrance. This force would become the dominant force at the end of the ebb current flowing east from the strait entrance. In this situation, resident water from inside the strait would pass through the strait entrance as the tidal currents ebbed and began to turn, thus allowing a net transport out. This pressure-mass force tending to move water out of the strait would have the effect of prolonging the ebb current and delaying the start of the flood. At this time the characteristic water from inside the strait would pass eastward and turn south prior to the tidal current reversal and the movement of the adjacent waters back into the strait. Because the pressure-mass distribution force is constantly being exerted, less water moves back into the strait than is moved out. As will be shown in a following section characteristic Labrador Current water was found on both sides of Cape Chidley, but very little was found directly in the entrance to the strait. This can be explained by the fact that the major amount of water moving in and out of the entrance by tidal action is a moderate mixture of the water found east and west of the entrance. The data in the area was obtained during a 12-hour period. The tidal current was ebbing when the stations were occupied in the southern half of the entrance, and flooding when stations were occupied in the northern half of the entrance. Because of this, it is believed that the survey vessel was in the wrong part of the strait entrance for observing the outpouring of the characteristic Labrador Current water at the end of the ebb current. This outpouring probably occurs just to the north of Cape Chidley and is supplied by the band of cold low salinity water located just

inside Cape Chidley. A comparison of this water mass with that found outside the strait will be made in a following section.

## PROPERTY DISTRIBUTIONS

As stated in the introduction, the main interest of the expedition was to trace, and examine the circulation of the cold low salinity water that makes up what is observed as the Labrador Current off the Grand Banks of Newfoundland. The analysis of the data herein is therefore confined to the consideration of water of this nature. For the purposes of this analysis, an arbitrary water mass was defined on the basis of 17-year mean temperature-salinity relationships. Shown in figure 9 are the mean T-S curves of the three basic water masses found off the Grand Banks. These means are based on International Ice Patrol Surveys during the period 1948 to 1964. The point located on the T-S curve for Labrador Current water defines the limits for analysis of water which has a temperature of less than  $2^{\circ}$  C. and a salinity of less than 34.3‰. This point roughly confines this water to the upper 200 meters. Using a limiting definition such as this, certain areas contributing water to the volume flow of the Labrador Current are immediately excluded from consideration as sources of the cold portion of the current. The boundaries of this cold water are also well defined in the property sections. Only about 5 percent of the cold, low salinity water found, failed to fulfill the T-S requirements. That is, if the water was less than  $2^{\circ}$  C. it was almost always less than 34.3‰ in salinity.

These defined limits encompass broad current areas, above the shelf, just inside the swifter flowing boundary current. As mentioned previously, this broad current area provides the cold environment in which the icebergs are transported south. It is also the area of the light water, variations in which cause the volume and velocity fluctuations in the southward flowing current.

The salinities and temperature obtained in the various sections vary quite significantly within the above definition. These variations provide the basis for some of the conclusion drawn in subsequent sections herein.

Figures 10 through 15 present the temperature and salinity distribution along the sections obtained during the expedition. Inserts in each figure give the relative locations of the individual sections. The  $2^{\circ}$  C. limit is shown by bold lines on

each of the temperature sections. As can be seen, the temperature gradients both horizontal and vertical, become much stronger above the  $2^{\circ}$  C. isotherm. This provides a useful boundary in the analysis of these water masses.

Figures 10 and 11 show the water properties in the northern reaches of the expedition and includes the line of stations occupied down the center of the Labrador Sea. Section H, taken halfway across the Davis Strait, shows large quantities of cold low salinity water. This is the only section where a considerable disagreement exists between the relative position of the  $2^{\circ}$  C. isotherm and the 34.3‰ isohaline. In this section, water of higher salinity exists which is much less than  $2^{\circ}$  C. in temperature. Significant here, however, is the observations that this disagreement exists well below 200 meters and probably represents a water mass of Baffin Bay Basin origin. The section immediately to the south, section G has a much shallower depth, thus this more saline, denser water is prevented from moving south into the area of interest.

Connecting the sections G and H in the west, figures 10 and 11 is section I. Because this section is located in the center of the northern end of the Labrador Sea, it crosses an east to west circulation of portions of the West Greenland Current as well as the eastern edge of the southward flowing Baffin Grand Current. To be noted in this section is the tongue of flow temperature water emanating from Baffin Bay. This tongue narrows and all but disappears to the south in this section. This is because of the east-to-west drift, encountered by the outflowing Baffin Bay water which causes a displacement to the right towards the coast and out of the limits of section I.

To the south, section F shown in figures 12 and 13, running east from Resolution Island shows a lack of water less than  $2^{\circ}$  C. Water of a salinity of less than 33.0‰ was totally missing. The sections to the north had great quantities of water less than  $2^{\circ}$  C. and 33.0‰. This supports the circulation regime observed in the dynamic height and isentropic charts where little of the water from the north appears to pass through this section. The water in this section is totally different than that from the north and appears to be supplied by water from the east. One small offshore cold core, and a slightly larger core of cold water near Resolution Island are found in the section.



These small cold cores appear to be the only connection of this section with those to the north. The eastern limits of section F grade warmer and more saline, virtually eliminating any speculation that the water from the north is skirting the easternmost stations.

With the east eliminated as a pathway for the cold, low-salinity water from the north, section E would therefore represent one route taken by this southward moving water. Section E displays the considerable amounts of cold, low-salinity water expected. The cold core observed in section F, close to Resolution Island represents the other route taken by this water. This flow of water from the north was described in both the dynamic height and the isentropic charts. After leaving section F, the cold water turns to the west, just south of Resolution Island and flows into Hudson Strait.

Section D, across the entrance to Hudson Strait, shows cold, low-salinity water in stations 9457 and 9458 just south of Resolution Island. In the deeper half of section D, warmer, higher salinity water is present, similar to that found in section F and probably connected with it. The isotherms and isohalines are severely sloped downward to the south in section D and show the existence of water lower in salinity than has been found thus far. Section D', obtained just inside of the strait entrance shows similar salinities, but much lower temperatures. This same situation exists in section C, figures 14 and 15, taken east of Cape Chidley. Lower salinities then found to the north are present along with reasonably cold water. The circulation has already been shown to be out of the strait through D', D, and C. The water property sections supports this with the exception of the lack of any very cold water directly in the strait entrance, section D. This has been discussed in the previous section and will be mentioned again in the treatment of T-S curves below.

The shelf depth to the south of section C becomes shallower, probably accounting for, in part, the anomalous dynamic height contours and the apparent damming or buildup of low density water in the western half of this section. Section B and A to the south, show the cold, low salinity cores of the Labrador Current.

Section J, figures 14 and 15, is presented for general interest showing the uniformity in temperature and salinity of the central Labrador Sea down to Ocean Station BRAVO. Only in the north are there any characteristic differences.

This small core of lower temperature-salinity water represents the southern boundary of the westward flowing filaments of the West Greenland Current.

## TEMPERATURE-SALINITY RELATIONSHIPS

Figures 16 and 17 show the T-S diagrams for each station taken in the vicinity of the Hudson Strait entrance. On each T-S diagram there is a cross (+) giving the location of the upper limits of the defined water mass of 2° C. and 34.3‰. Shown also is a comparative diagram of the 17-year mean of the water mass characteristics of the Labrador Current.

Comparing the eastern ends of sections G, F, C, and B of figures 16 and 17, the rather abrupt changeover of the water mass characteristics is apparent. As the easternmost stations are approached, the T-S relationships changes from within the defined limits to completely outside, thus forming a good eastern boundary for later volume analysis. Section F shows very little of the defined water except at stations 9471 and 9470. However, there is still a profound change in the T-S relationships offshore between stations 9465 and 9464. The warm, saline waters located at the eastern ends of these sections are those of the Labrador Sea. The transition zones between the characteristic defined water and that of the Labrador Sea, are naturally coincident with the swift flowing boundary current shown in the dynamic height chart figure 8.

The water characteristics of section E match very well the characteristics of the water to the north in section G. This, as pointed out above, seems to be one of the paths that cold water takes flowing from the north. Stations 9471 and 9470, of section F, are a second path taken by this water as it flows south and can be followed through Hudson Strait entrance, section D, at stations 9458 and 9457. The water flowing south in the vicinity of stations 9469 through 9566 of section F, seems to match characteristics with the waters at stations 9437 and 9436 of section C. This agrees quite well with the dynamics shown in figure 8 where an area of low topographic definition displays a slow meandering current which moves west and then recurves to the southeast and flows through section C.

In section D, station 9455 appears to be at the transition zone between the characteristically lower salinity water running out of Hudson Strait and

the slightly higher salinity water running in. The T-S diagrams of section D abruptly shift toward the lower salinity values and lower temperatures at station 9454.

Section C, west of station 9437, exhibits water characteristics much less saline, but not quite as cold as the waters to the north in section G. Local warming, and some mixing of water from the east, can account for the elevation in temperatures, however, no water from the north or east can contribute the low salinity values found in section C. Section D does not contain these low values of salinity either, but they are found in section D'. This section, just to the west of Cape Chidley, seems to be the source of the low salinity waters of section C even though no good continuity of low salinity water can be shown to connect them. As discussed in a previous section, tidal fluctuations, mixing and improper timing of the survey ship in transiting section D probably accounts for the lack of continuity of the water masses.

Section B, to the south, shows low salinity and slightly warmer water. Warming would be expected here as the colder water passed south into shallower shelf areas.

The circulation concepts postulated from the dynamic height and the isentropic charts appear to be borne out by tracing the flow patterns using T-S relationships.

## TEMPERATURE TIME STUDY

Presented in figure 18 is a time-series study of the temperature structure of the water in the entrance to Hudson Strait. The location was in the vicinity of station number 9452, about 8 miles north of the islands off Cape Chidley. An attempt was made to observe the cold, low salinity water, moving eastward out of the strait from its source southwest of Cape Chidley. Unfortunately this area turned out to be an area of low geostrophic current. Radar was used to keep the ship's position fixed and drift plots of the vessels were used to determine the tidal current changes. Figure 18 shows the electronic bathythermograph (ELBT) records obtained in this location along with ELBT records obtained both inside the strait, station 9461, section D' and outside the strait, stations 9444, 9443, section C. Station 9461 is located within the cold, low salinity water mass believed to be the source of the characteristic Labrador Current.

The arrival of the colder water, at least as cold as found in quantity in section C, stations 9443 and 9444, can be seen in figure 18. This arrival appears nicely timed with the end of the observed ebb current. The temperature structure shows the increase and decrease in the amount of cold water moving through the strait to be obviously connected with the tidal current as hypothesized previously. The failure to obtain a Nansen cast at the time of the arrival of this cold water prevents the proof of lowered salinity of this water, however, from the other evidences presented this is a logical assumption.

## MEAN SALINITY DISTRIBUTIONS

One of the more revealing analyzations of the data is presented in figure 19. Shown here is the mean salinity of the southward moving water within the defined characteristics of less than 2° C. and 34.3‰. These mean salinities were obtained by using the values of the salt transport and the volume flow in the following equation:

$$S^0_{/oo} = \frac{M_s}{\bar{V}\rho}$$

where:

$M_s$  = salt transport

$\bar{V}$  = volume flow

$\rho$  = density of sea water

The mean salinities of the water exchanged through the entrance of Hudson Strait were computed for both directions of flow because of the large changes in the salt concentration and flow patterns across the entrance.

The northernmost section of figure 19, section G, shows a 33.37‰ mean salinity for the southward flowing Baffin Land Current. Further to the south, this current appears to shed a lower salinity filament which flows into Hudson Strait, north of Resolution Island through section E. The source of this lower salinity filament is the inshore or coastal portion of the Baffin Land Current. The salinity of the section extending east of Resolution Island, section F, is higher than the Baffin Land Current in section G to the north. This increase in salinity is the result of both the loss of the inshore filament flowing through section E, and the intrusion of more saline water from the western Labrador Sea.

Directly to the south of section F, section C exhibits a mean salinity considerably lower than any



of the sections to the north. This indicates that a supply of less saline water is being introduced into the circulation of the area. The eastern approaches to this section are eliminated as the source due to the higher salinity of the Labrador Sea. The northern approaches obviously do not contain any significant quantities of low-salinity water. Only the waters outflowing from Hudson Strait are comparable in mean salinities with the waters of section C and section B further to the south. A clear pattern appears in this mean salinity distribution. High-salinity water from the north appears to turn into Hudson Strait, in the northern half, while lower salinity water is put into the system from Hudson Strait in the southern half.

Campbell (1958) found the circulation in Hudson Strait to be westward along the northern coast and eastward along the southern coast. He also found a recurving and a mixing of the water flowing along the northern shore, with the water to the south. This occurs roughly midway along the strait and provides the mechanism for altering the high salinity water flowing in, by mixing it with very low salinity water flowing out of Hudson Bay. Campbell (1958) shows the salinity distribution, at 20 meters, for October 1955 and July 1956, in Hudson Strait and the outlet of Hudson Bay. He found a high-salinity inflow into the strait from the east, greater than 33.0‰ and an outflow from Hudson Bay of less than 30.0‰. These would be the necessary concentrations for the mixing and formation of the mean salinities observed flowing eastward through the entrance of Hudson Strait. Contributions from other sources in the Hudson Bay, Hudson Strait area are also cited by Campbell. Their existence eliminates any simplified or unique mixing ratios between Baffin Land Current water and the resident water of Hudson Bay. Campbell shows the area of recurvature of the impouring Baffin Land Current and subsequent mixing with the eastward moving water of Hudson Strait, to be east of the major, resident water sources. The sum total of the low salinity contributions from Hudson Bay and Foxe Channel located just north of Hudson Bay, form the major water masses which combine with the inflowing Baffin Current, modifying it into a characteristic water mass. Thus the circulation system in Hudson Strait appears to absorb the high salinity water, mix it with very low salinity water, and eject this mixture as the char-

acteristic low salinity water which forms the shelf portion of the Labrador Current.

## VOLUME FLOW

Figure 20 presents the summarized volume flow and salt transport values, in each direction, for the defined water mass. Presented also are the net transports. The question of the validity of the dynamic height calculations was raised in a previous section. The limitations of the dynamic method are carried over into the volume flow and salt transport calculations because they are based on the dynamic heights. The areas bounded by sections G, E, F, and F, D, C should fulfill the requirements of conservation of mass. That is to say, the volume of water and salt flow into a particular closed area, should equal the volume flowing out. The particular area defined above, and shown in figure 20 are bounded either by the sections listed, land masses, or the Labrador Sea which falls outside the defined water mass characteristics of less than 2° C. and 34.3‰.

The sections of G, E, and F, the Baffin Island coast, and the 2° C. isotherm, shown in figure 20, define a closed area which should fulfill the requirements of mass conservation. First looking at the net volume flow values of figure 20.

Section G, net south:  $1.85 \times 10^6 \text{ m}^3/\text{sec}$

Section E, net west:  $\frac{-0.59 \times 10^6 \text{ m}^3/\text{sec}}{1.26 \times 10^6 \text{ m}^3/\text{sec}}$

This figure compares with net volume transport south through section F of  $1.07 \times 10^6 \text{ m}^3/\text{sec}$ . Repeating these computations for the salt transport:

Section G, net south:  $638.0 \times 10^8 \text{ gms}/\text{sec}$

Section E, net east:  $\frac{-198.9 \times 10^8 \text{ gms}/\text{sec}}{439.1 \times 10^8 \text{ gms}/\text{sec}}$

This compares with the net salt transport south through section F of  $371.5 \times 10^8 \text{ gms}/\text{sec}$ . These in-and-out figures agree within 15 percent for both volume and salt transport.

Extending these comparisons to the area south of Resolution Island bounded by sections F, D, and C and the 2° C. isotherm to the east, the following calculations are made:

Section F, net south:  $1.07 \times 10^6 \text{ m}^3/\text{sec}$

Section D, net east:  $\frac{+2.23 \times 10^6 \text{ m}^3/\text{sec}}{3.30 \times 10^6 \text{ m}^3/\text{sec}}$

Comparing this figure with the flow south through section C, the value of  $3.57 \times 10^6 \text{ m}^3/\text{sec}$

can be observed in figure 20. Again repeating for the salt transport :

Section F, net south :  $371.5 \times 10^8$  gms/sec

Section D, net east :  $\frac{+731.1 \times 10^8 \text{ gms/sec}}{1102.6 \times 10^8 \text{ gms/sec}}$

The outflow south from this area through section C shows a salt transport of  $1198.2 \times 10^8$  gms/sec. In this area, the in-and-out figures of the volume and salt transport agree within 8 percent.

The relatively close agreement of the flow figures, to and from these bounded areas supports the circulation and flow computations deduced from the dynamic heights. It reaffirms the validity of the dynamic method, particularly in shallow water. A 10 percent accuracy is as good as can be expected in view of the great number of assumptions, technique errors, and nonmass related flow forces. It is singularly reassuring, if not surprising, that the percentage agreement shown above is as close as it is.

The water exchange through the Hudson Strait entrance, north and south of Resolution Island shows a net flow, to the east, of  $1.64 \times 10^6 \text{ m}^3/\text{sec}$ . This volume flowout, accounts for almost 50 percent of the net flow to the south through section C. As pointed out in the previous section, high-salinity water flows into Hudson Strait and is mixed, midway up the strait, with low-salinity water moving out of the Hudson Bay, Foxe Channel area. The mean salinity of the net westward water flow into the Hudson Strait entrance is 33.36‰ and the mean salinity of the net outflow is 32.72‰. A simple mixing calculation will show the required salinity of the mixing constituent that combines with the inpouring Baffin Land Current water, resulting in the characteristic cold, low salinity water of the shelf portion of the Labrador Current. Referring to figure 20, across the entrance to Hudson Strait, the following equation is applied :

$$V_t M_t = V_1 M_1 + V_2 M_2$$

where

$V_t$  = total volume flowout,  $4.78 \times 10^6 \text{ m}^3/\text{sec}$

$M_t$  = mean salinity out, 32.72‰

$V_1$  = volume flow in,  $3.14 \times 10^6 \text{ m}^3/\text{sec}$

$M_1$  = mean salinity in, 33.36‰

$V_2$  = volume flow of mixing constituent,  $1.64 \times 10^6 \text{ m}^3/\text{sec}$

$M_2$  = mean salinity of mixing constituent

Solving the above equation results in a value for  $M_2$  of 31.49‰. This value falls very nicely within the approximate limits of the salinities of the water masses available within Hudson Strait, discussed in two previous sections, which undoubtedly combine and form the mixing constituent for subsequent combination with the Baffin Land Current water.

The volume flow of section B is quite low compared to that through section C. The mean salinity of sections B and C are quite comparable, however the volume flow is only half that of C. There are several possible explanations for this disagreement :

First, the depth of section C is greater by at least 100 meters than section B. If it is assumed that the gradient pressure force of section C is acting along prescribed geostrophic principles, the strong flow south, induced in section C, is forced through section B, resulting in a swift barotropic flow and not detectable by an examination of the mass distribution.

Second, the situation may exist in section C, where the outflowing tidal pulses, speculated on previously, cause a pileup of the light water. This is indicated by the dynamic height contours which intersect the coast of Labrador. In this situation, the time lag of the adjustment period is such that this mass or slug of light water is at least a semi-permanent feature in the area. Therefore as found, the geostrophic movement south is slow through section B, but over a given time period is sufficient to carry off the periodic tidal buildup of the water emanating from Hudson Strait at section C. This concept would still allow the use of the dynamic method for examining the pressure-mass distribution flow tendencies. One supporting point for this argument is that the total outflow from Hudson Strait,  $1.64 \times 10^6 \text{ m}^3/\text{sec}$ , is only slightly less than the  $1.68 \times 10^6 \text{ m}^3/\text{sec}$  net southward flow through section B. The limited southward flow from section F, which appears to be continuous through section C and B has properties within the defined water mass but on the warm, higher salinity end. This can be seen from the T-S curves of figures 12 and 14. Being warmer and saltier, and in proximity with the boundary Labrador Sea water, makes it more susceptible to receiving heat and salt, as it moves south thereby removing good portions of its volume flow from the defined water mass analyzed prior to its arrival at section B.



No complete explanation can be given at this time. It is hoped that a similar cruise being undertaken in 1966 will clarify the situation.

Section A, well to the south and not shown on figure 20, had a volume flow  $1.28 \times 10^6 \text{ m}^3/\text{sec}$  and a mean salinity 33.53‰. This section is sufficiently far to the south of section B to permit lateral entrainment of the Labrador Sea water from the east which not only reduces the amount of the defined water mass but also causes a salt and heat increase. This would make these volume and salt figures noncomparable with the values found in the north.

Smith (1937) did a limited amount of quantitative work in the entrance to Hudson Strait based on the 4 stations he obtained there. He estimated the net discharge to be  $1.0 \times 10^6 \text{ m}^3/\text{sec}$ , but points up the probability of the seasonal and yearly changes that occur. His calculations lacked data in the strait north of Resolution Island.

Quantitative flow work in Hudson Strait was performed by both Campbell (1958) and Farquharson and Sauer (1960). Campbell determined the summer rate of the eastward current in Hudson Strait to be about 17 kilometers per day. The work done by Farquharson tends to support this finding through the use of current meters. The data from the 1965 expedition show a 49 kilometer per day current flowing east through the entrance across a 19-mile wide group of stations. Campbell (1958) also made transport calculations of this eastward flowing current within the strait. He shows a net eastward flow of  $0.3 \times 10^6 \text{ m}^3/\text{sec}$ . Calculations based on the 1965 expedition indicates a net eastward transport of  $1.64 \times 10^6 \text{ m}^3/\text{sec}$ , considerably higher than found by Campbell (1958).

The explanation of the discrepancies of the resulting figures presented herein and those arrived at by Campbell (1958) is found in the differences of location time, number of data points, and method of dynamic calculations. Campbell's calculations for July were made well within Hudson Strait and not in the restrictive entrance which would tend to increase the current velocities. His volume flow values were arrived at for a location west of Ungava Bay which undoubtedly contributes a good deal of water to the net eastward flow. The station location used by Campbell left large gaps between the end of his sections and the

coast. He speculates that as much of the flow could be passing through this gap as passes through the entire calculated section. Furthermore, his usage of a variable depth of no motion within the strait limited by a maximum of about 350 meters, would not result in comparable computations with those made using a 1000-meter depth of no motion. In addition to the points above, the different years in which the data was obtained could account for the incomparability alone.

## FUTURE WORK

Another expedition is planned during July and August of 1966 to the Hudson Strait area. Survey work will be performed both inside and outside the entrance of the strait in an effort to tie the circulation of both areas together. In addition, parachute drogues will be used, during several tidal cycles, in order to obtain direct measurements of the net flow through the strait. Multiple section occupations over several tidal cycles will also be attempted in order to verify the constancy of the distribution of mass regardless of the tidal current fluctuation.

## SUMMARY

The circulation of the Baffin Land Current is into Hudson Strait, north and south of Resolution Island. No large volume flow appears to be continuous between the Baffin Land Current and the Labrador Current. To the east of Resolution Island low velocity currents flow in a general southerly direction. The water flowing into Hudson Strait has a mean salinity 0.64‰ higher than the mean salinity of the water flowing out of the strait. It is further indicated that the characteristic low salinity water of the Labrador Current emanates directly out of the strait and is the result of the mixing, within Hudson Strait, between very low-salinity resident waters and the inflowing Baffin Land Current. Calculations show that  $1.64 \times 10^6 \text{ m}^3/\text{sec}$  outflow from Hudson Strait is contributed to the Labrador Current. Calculations further show that this net outflow forms at least 50 percent of the Labrador Current flowing south of Hudson Strait.



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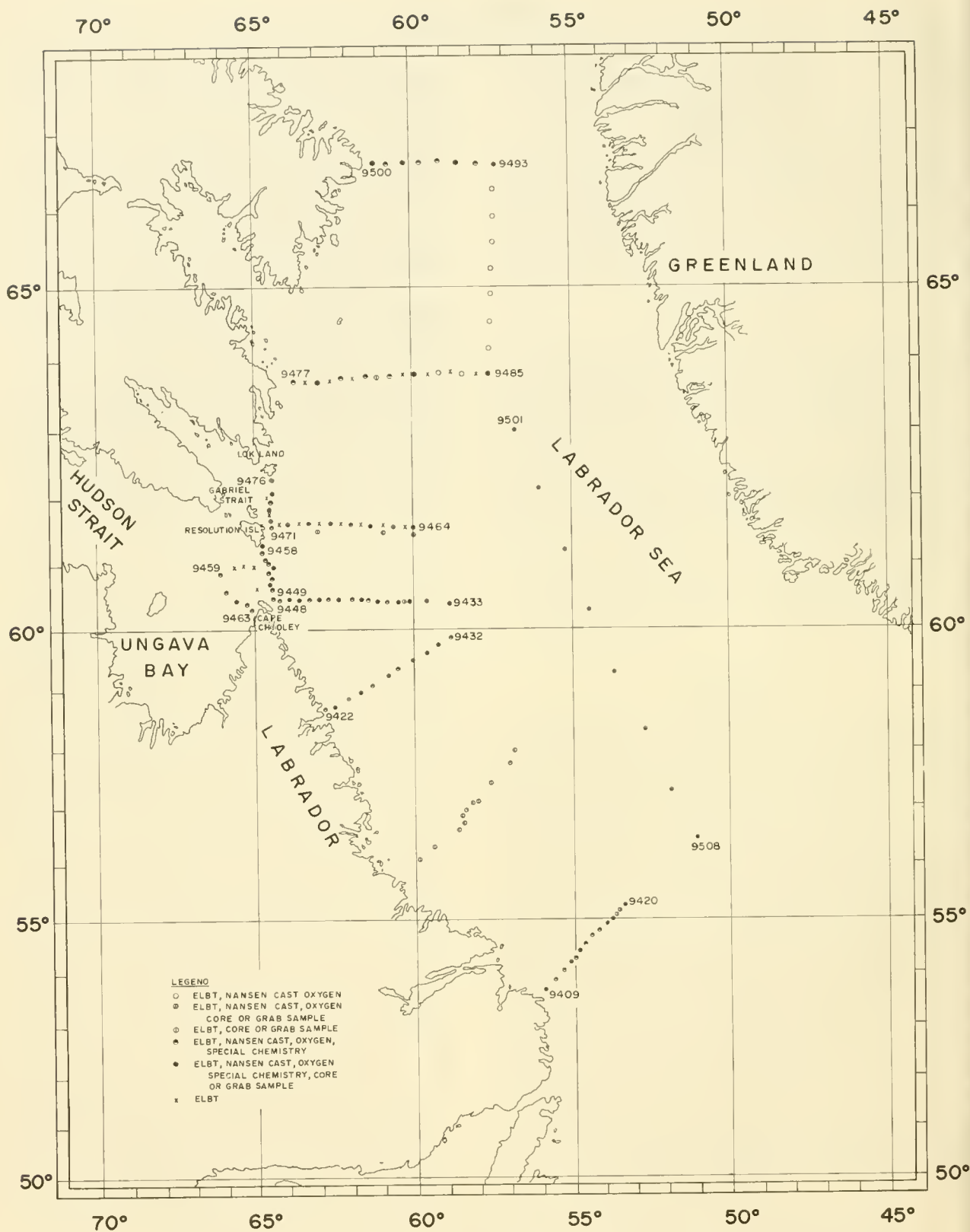


Figure 1. Station array and types of sampling accomplished at each location during the Labrador Current Expedition, July–August 1965.

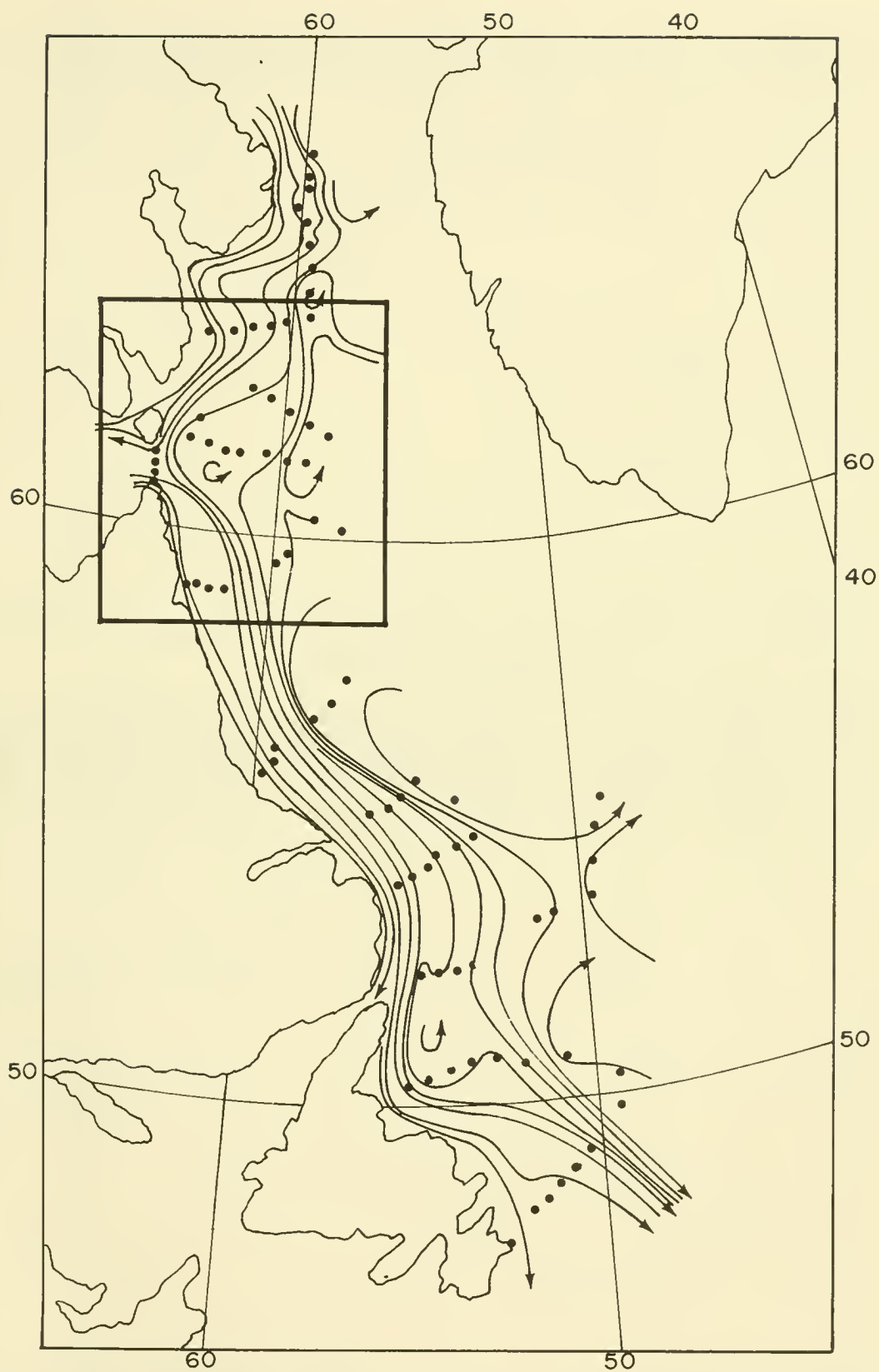


Figure 2. Station array and dynamic height streamlines obtained by Smith (1937) from the CGC MARION Expedition.

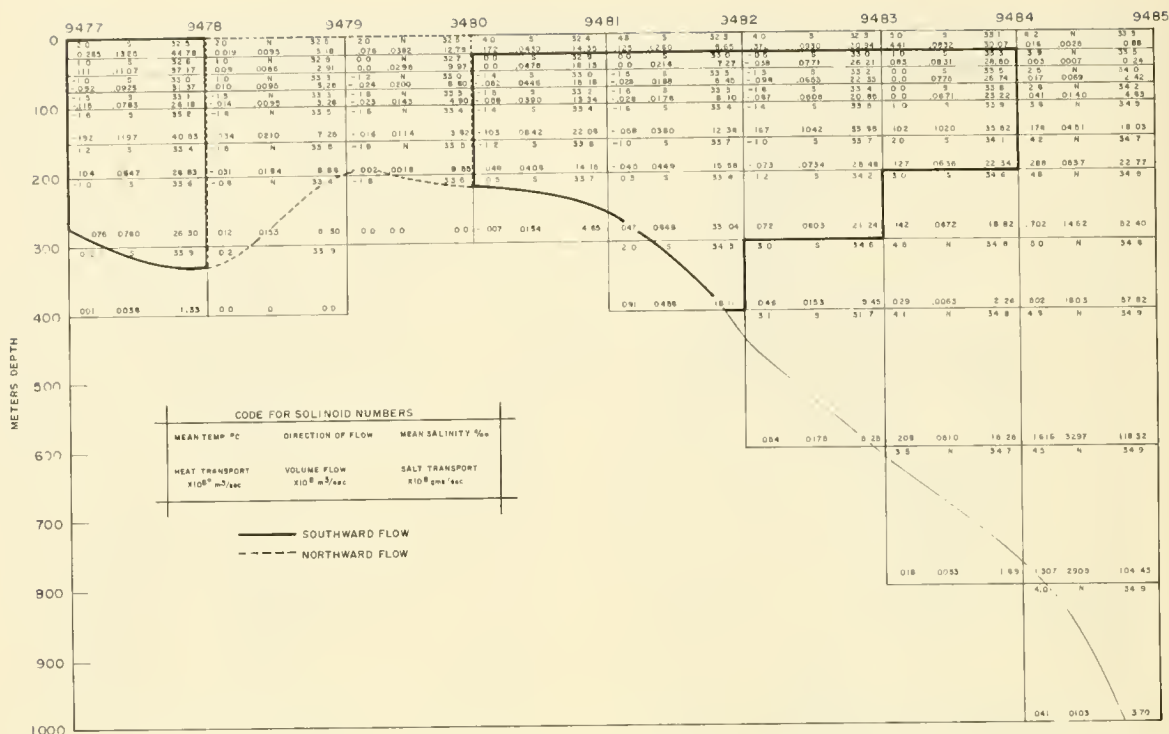


Figure 3. Solenoid division of section across Baffin Land Current, located off Loks Land, as used in the volume, mass, and heat transport calculations.

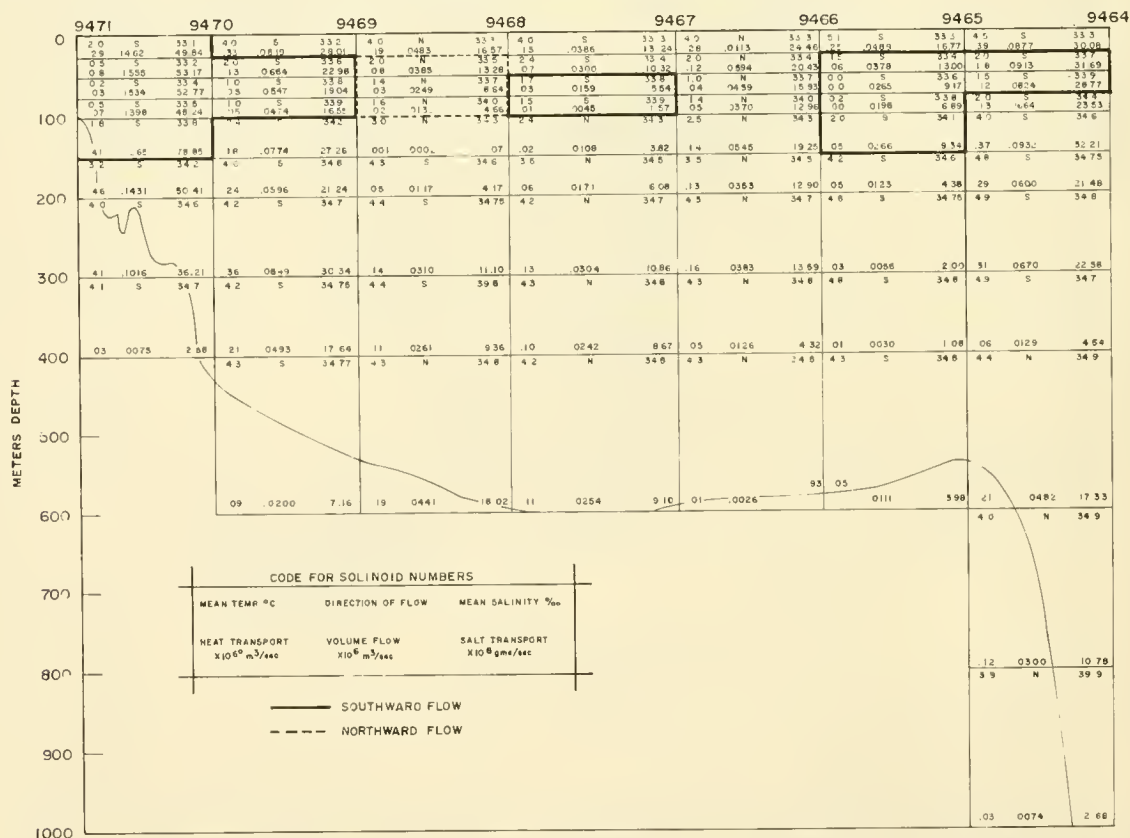


Figure 4. Solenoid division of section to the east of Resolution Island as used in the volume, mass, and heat transport calculations.

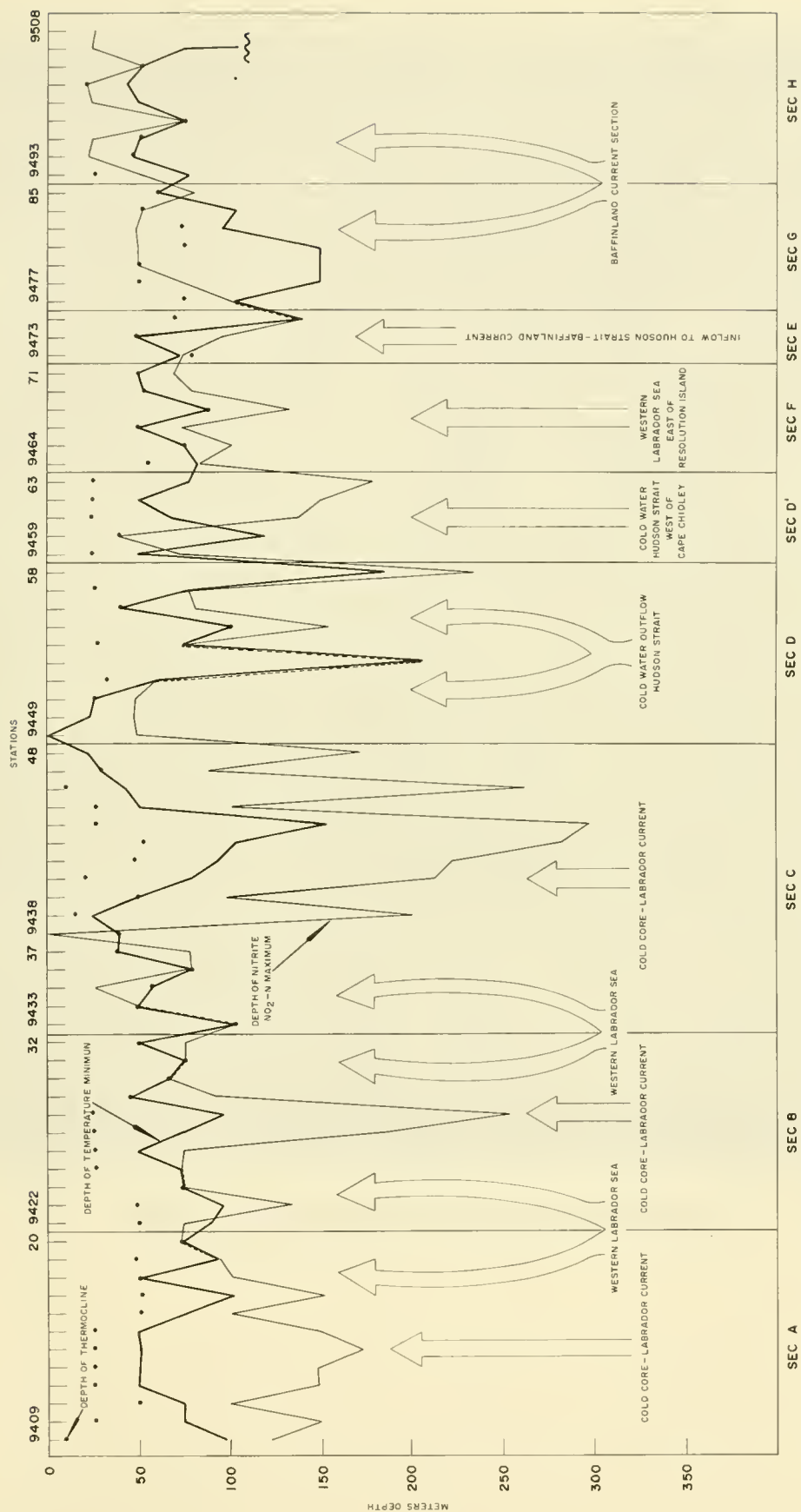


Figure 5. Composite station plot showing the depth of the temperature minimum, depth of the thermocline, and the depth of the nitrite ( $\text{NO}_2\text{-N}$ ) maximum.

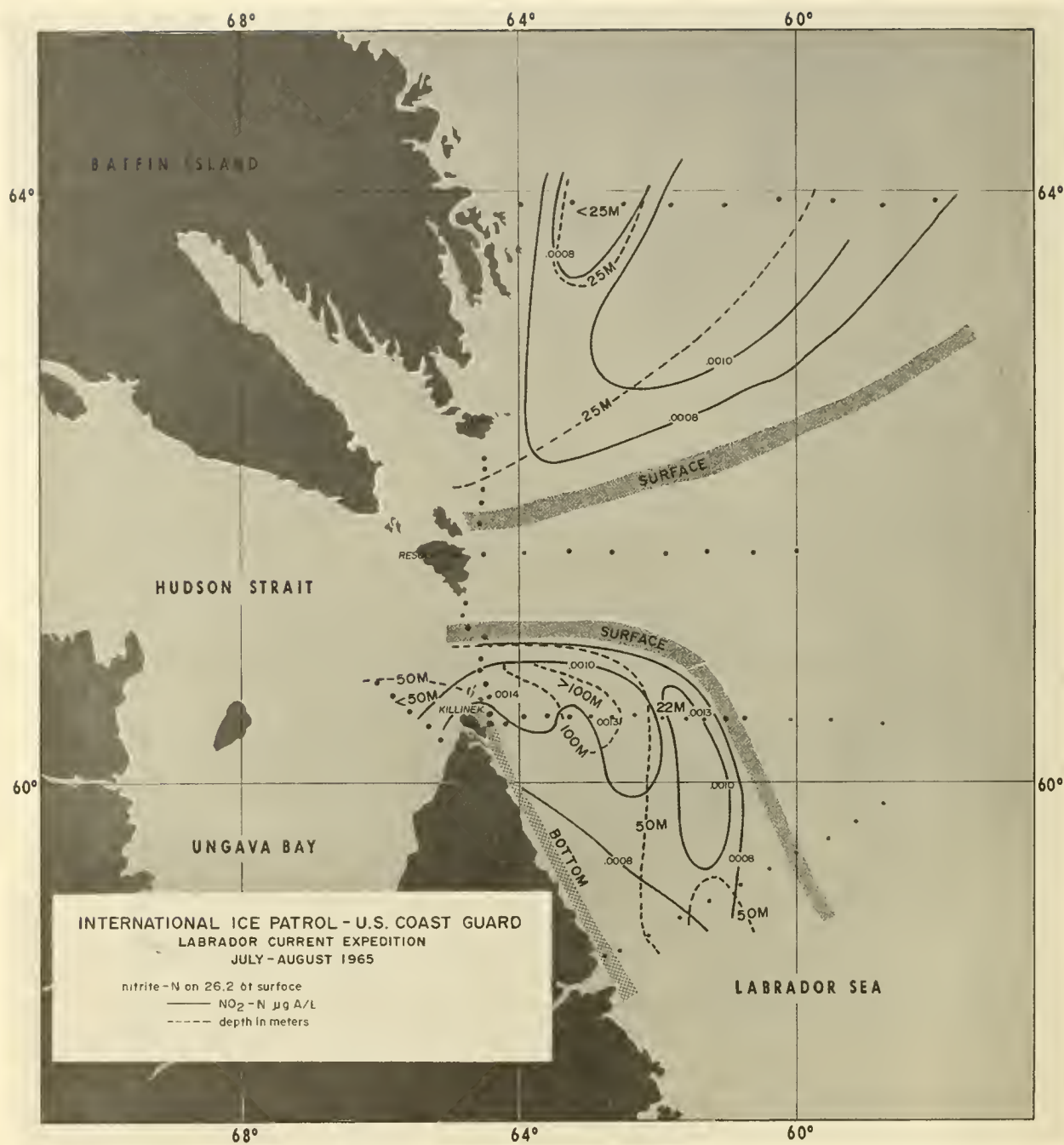


Figure 6. Depth plot of the 26.2 sigma-t surface showing the contours of the nitrite ( $\text{NO}_2\text{-N}$ ) distribution. Shown also are the surface intersections with the sea surface and bottom.



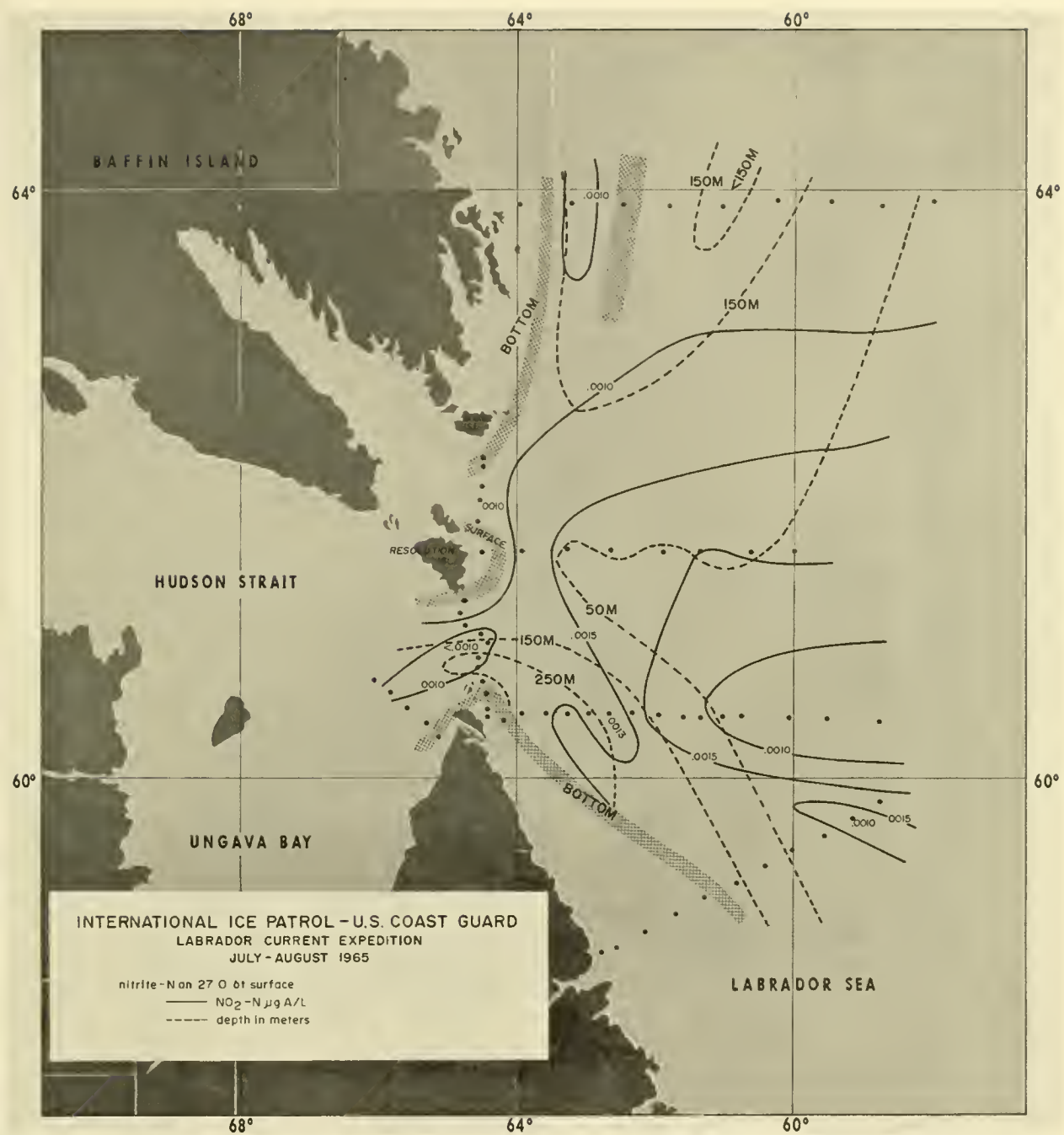


Figure 7. Depth plot of the 27.0 sigma-t surface showing the contours of the nitrite ( $\text{NO}_2\text{-N}$ ) distribution shown also are the surface intersections with the sea surface and bottom.



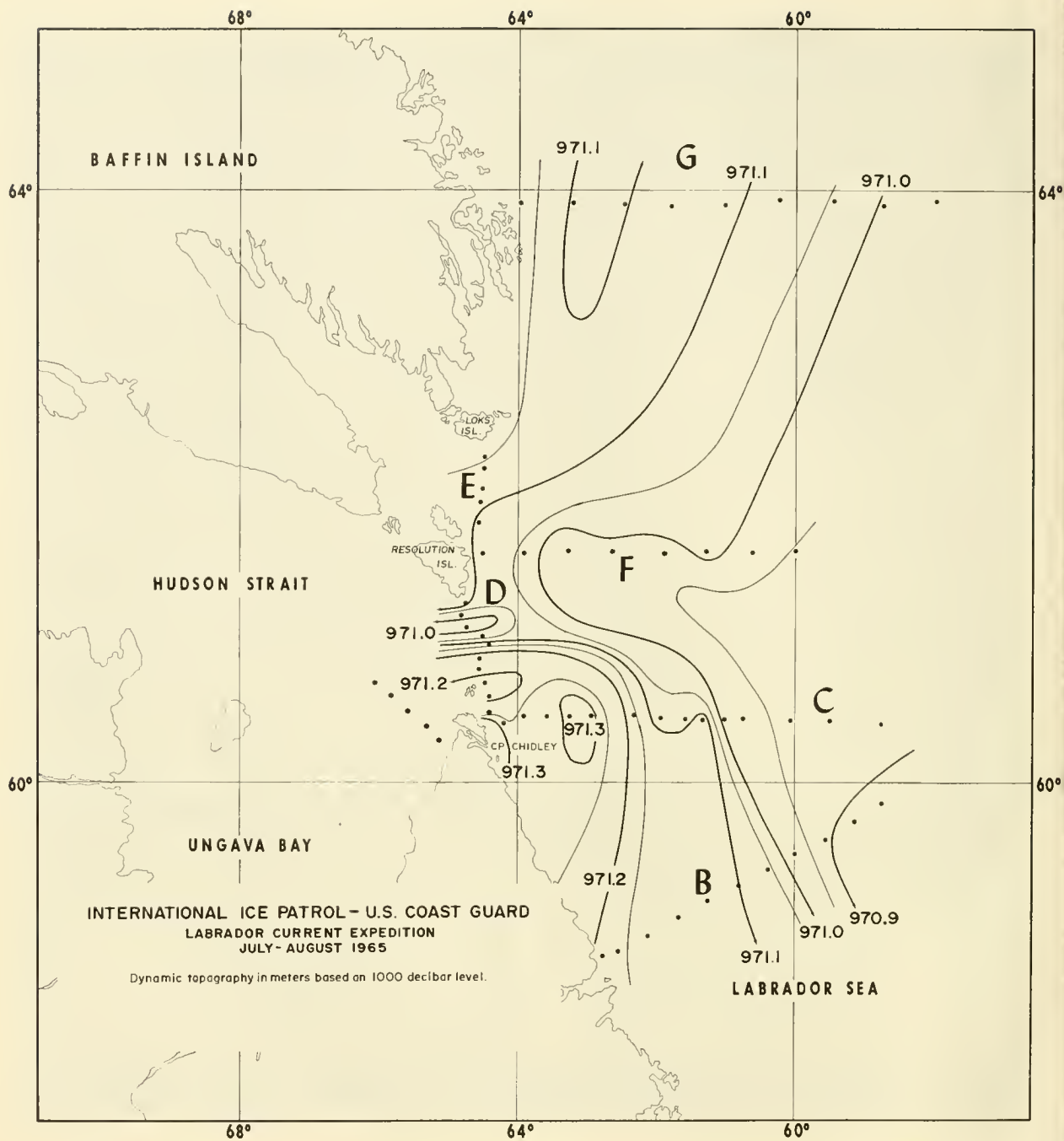


Figure 8. Surface dynamic height chart of the survey area, in dynamic meters based on a 1000-decibar level of no motion.

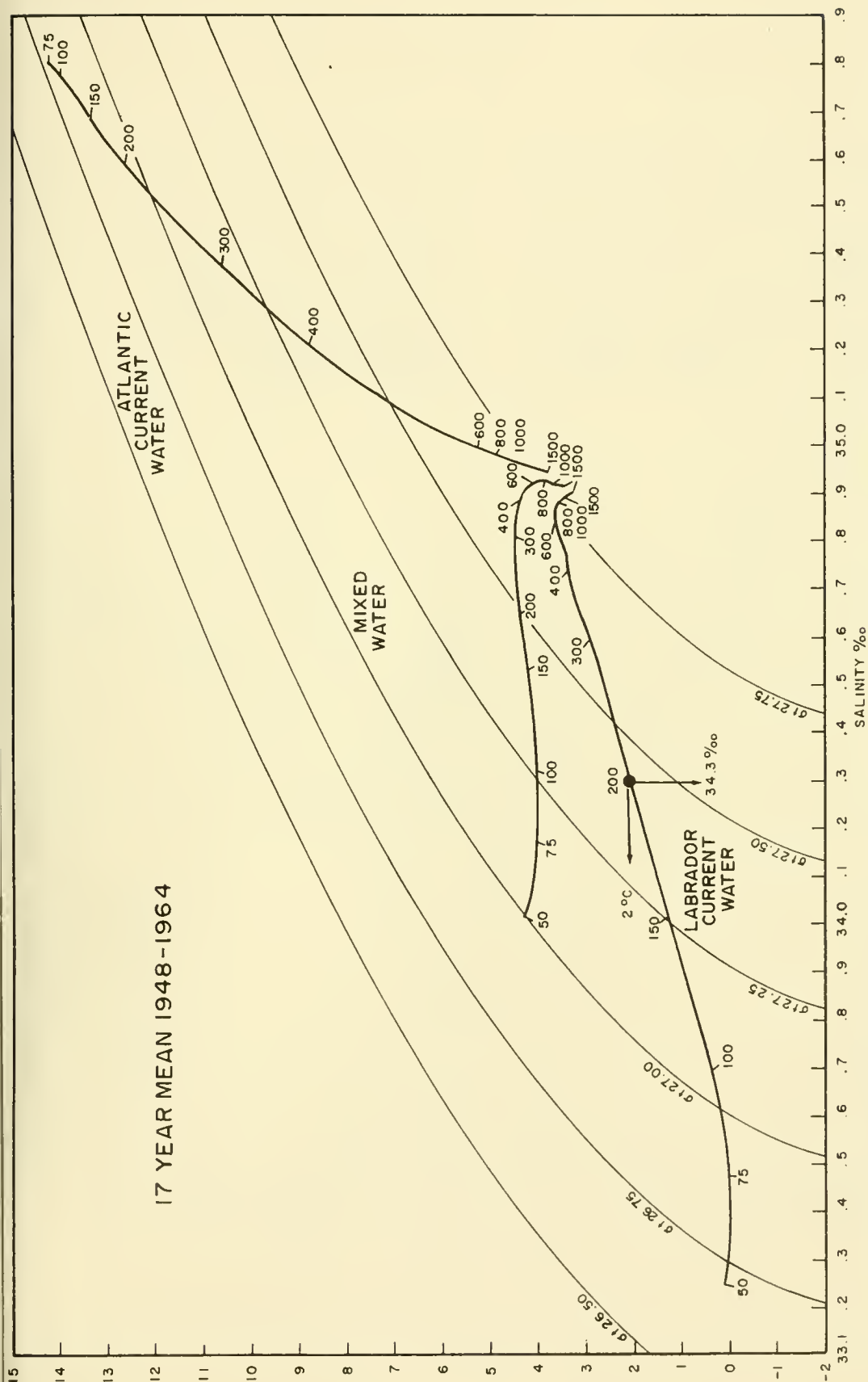


Figure 9. Temperature-salinity relationships of the water masses found off the Grand Banks of Newfoundland based on 17 years of data. Limits of the defined water mass are shown.

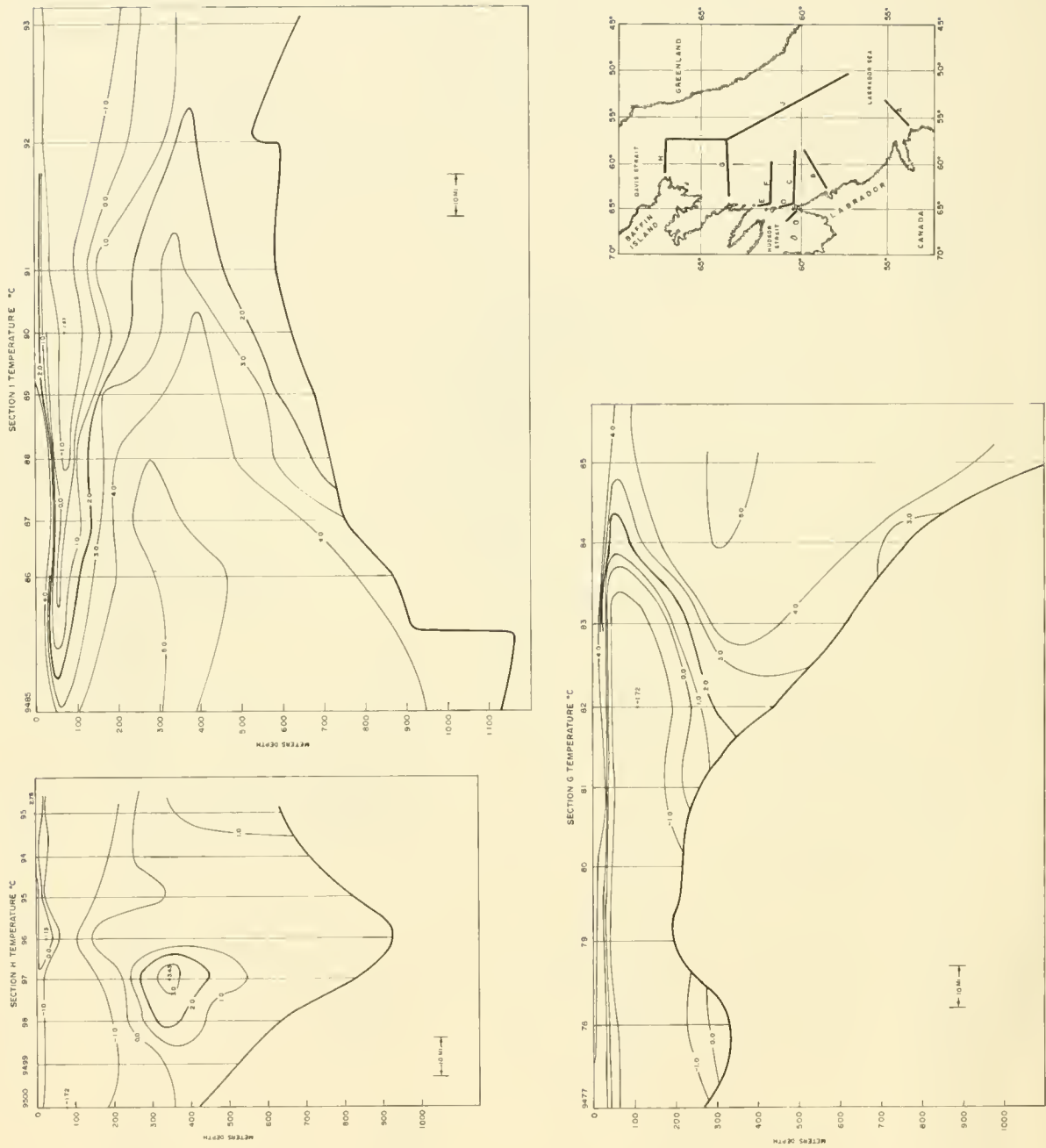


Figure 10. Temperature distribution (°C.) in the sections located in the northern Labrador Sea.

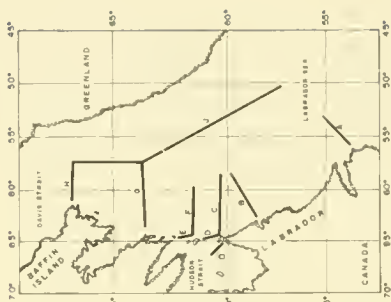
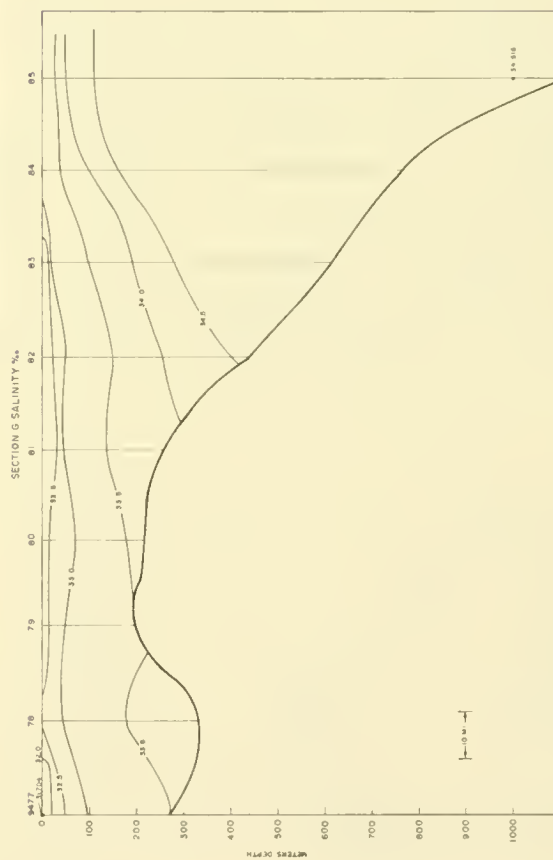
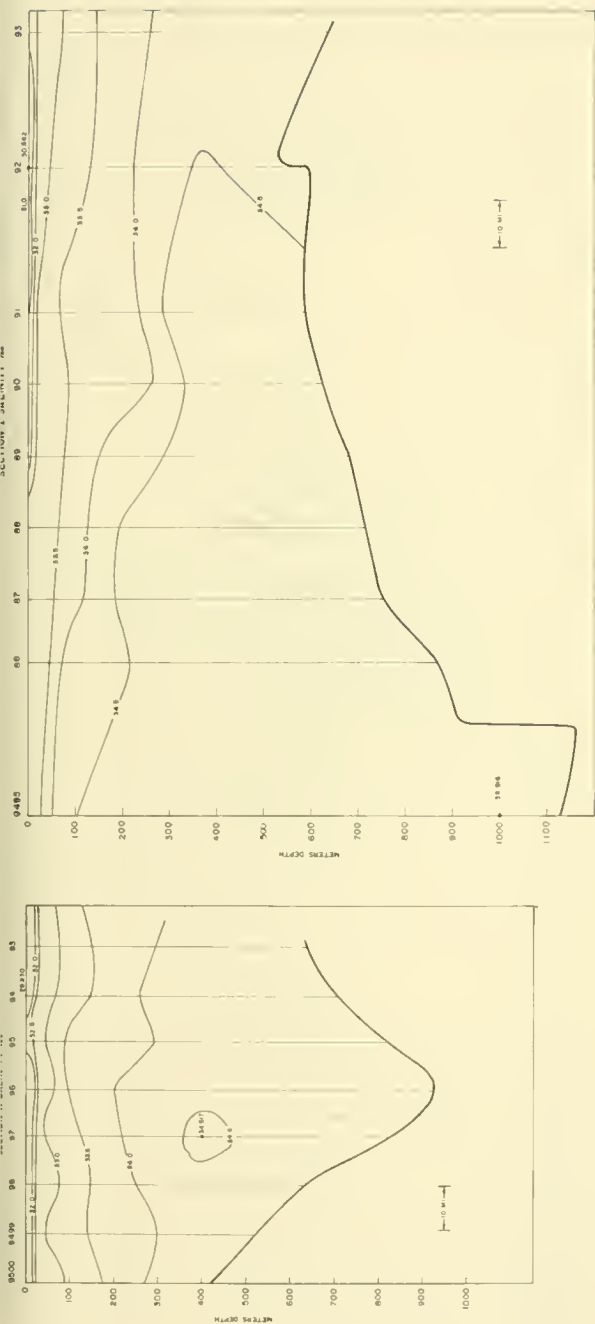


Figure 11. Salinity distribution (‰) in the sections located in the northern Labrador Sea.

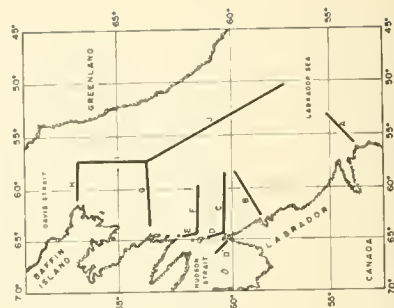
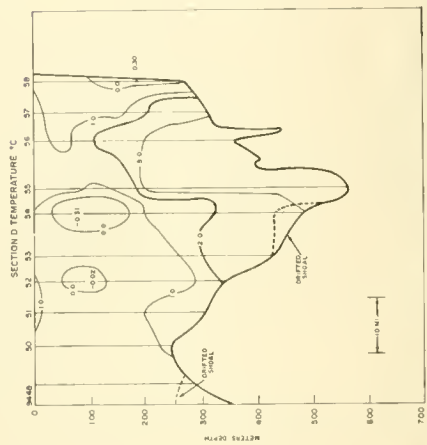
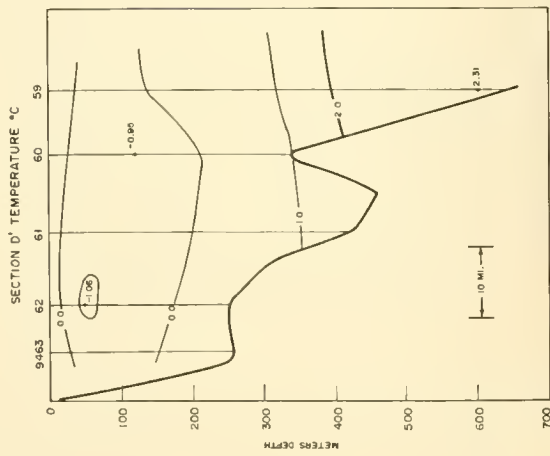
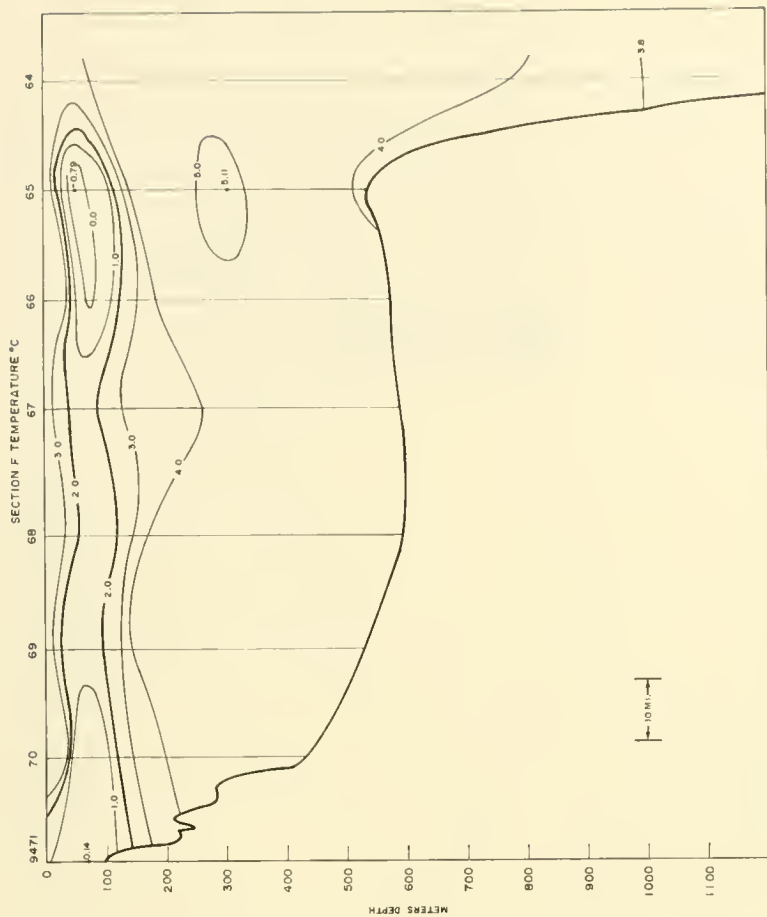
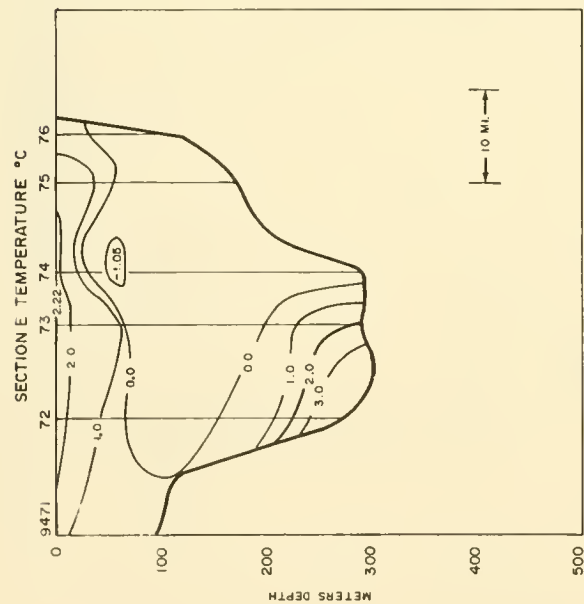


Figure 12. Temperature distribution (°C.) in the sections located in the vicinity of the entrance to Hudson Strait.

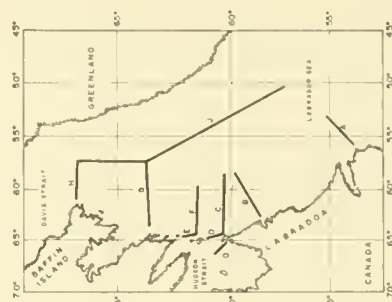
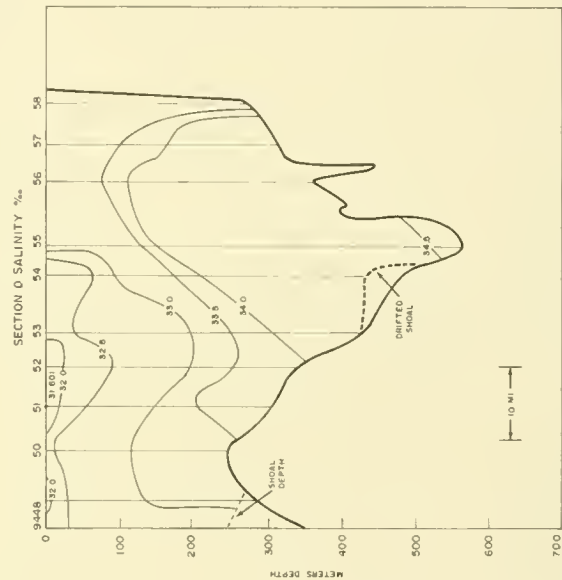
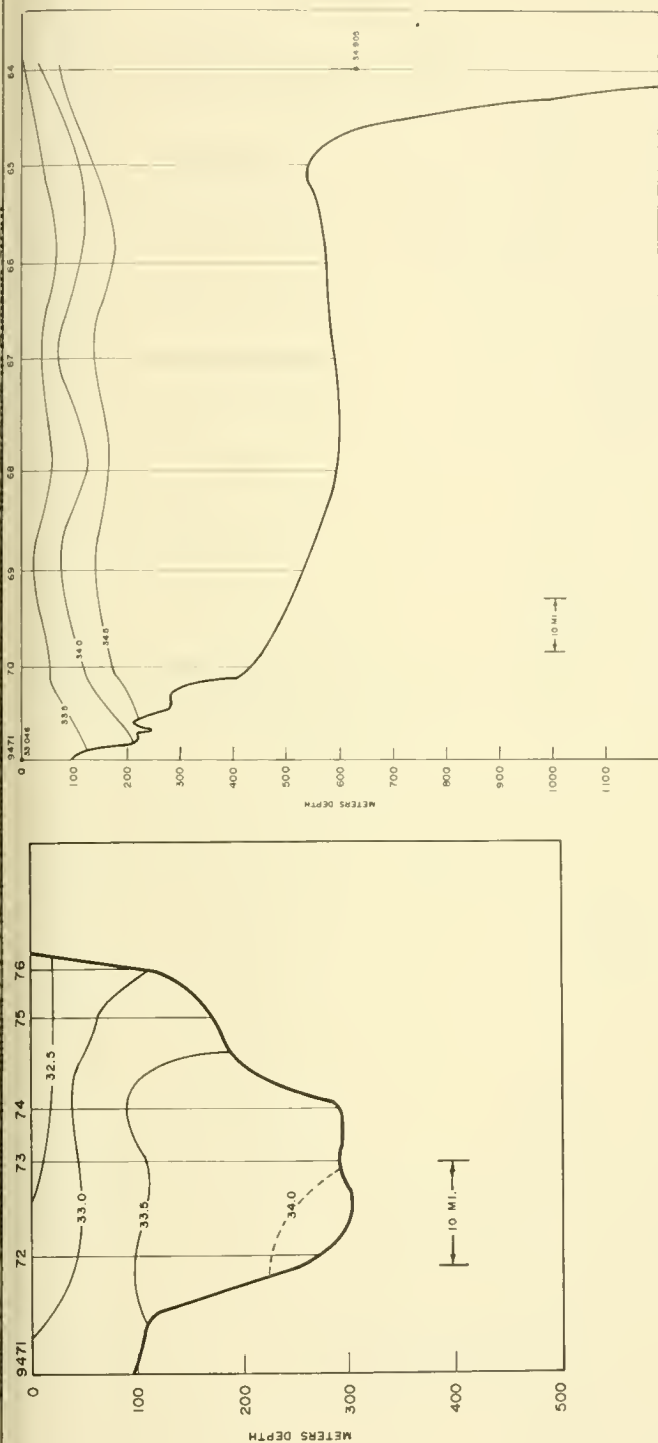
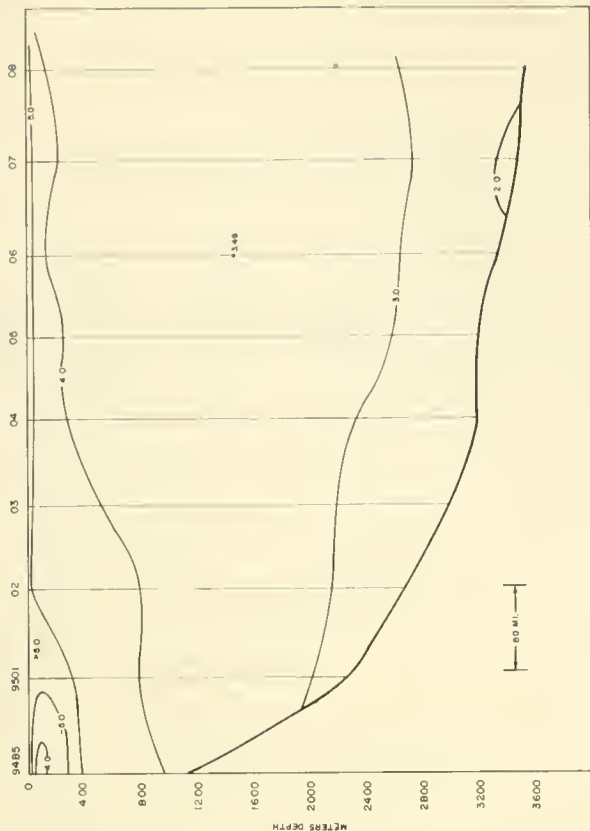
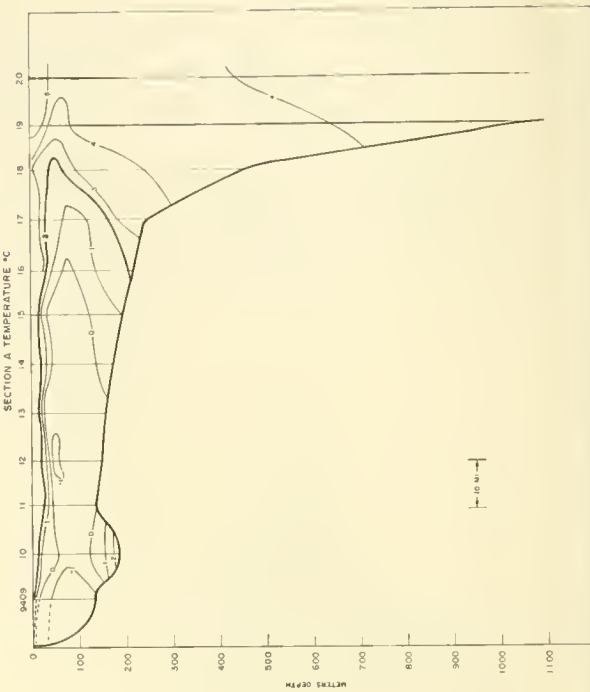


Figure 13. Salinity distribution (‰) in the sections located in the vicinity of the entrance to Hudson Strait.

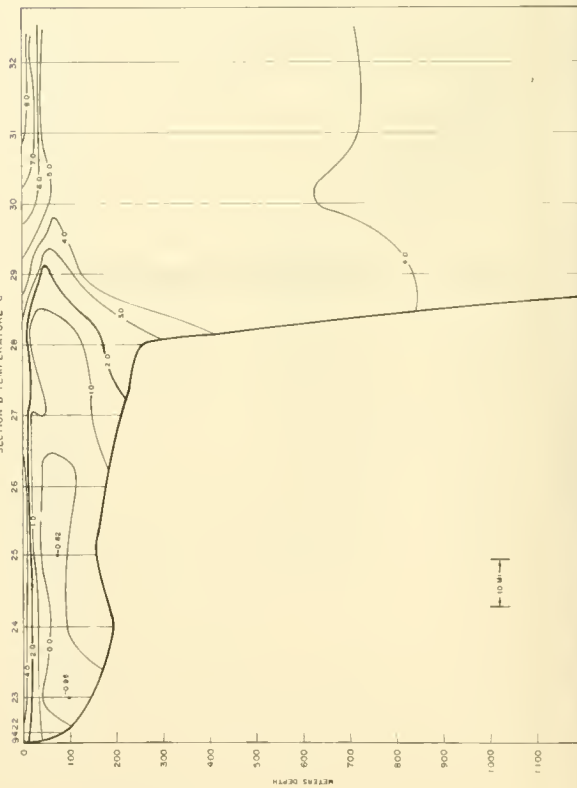
SECTION J TEMPERATURE °C



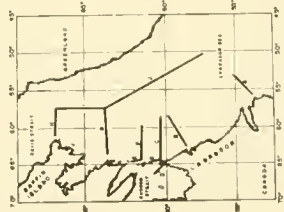
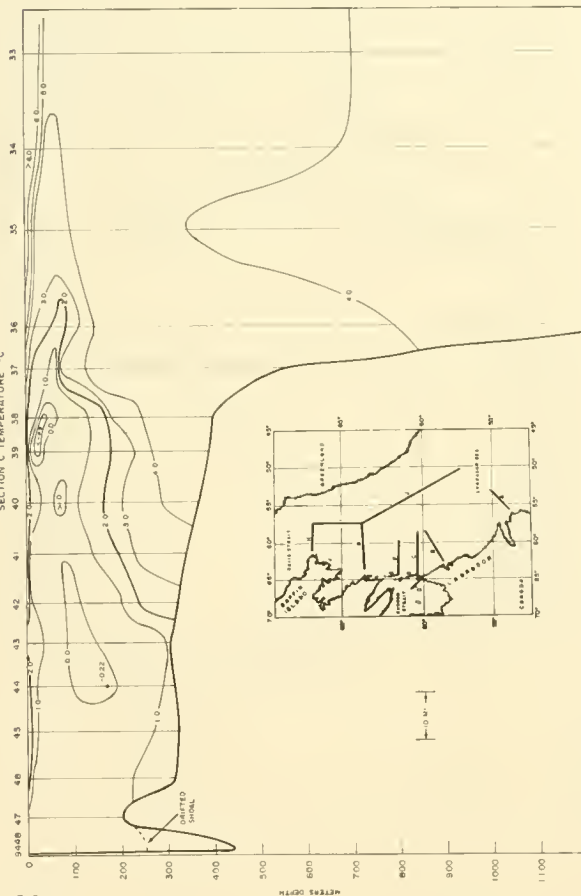
SECTION A TEMPERATURE °C



SECTION B TEMPERATURE °C



SECTION C TEMPERATURE °C





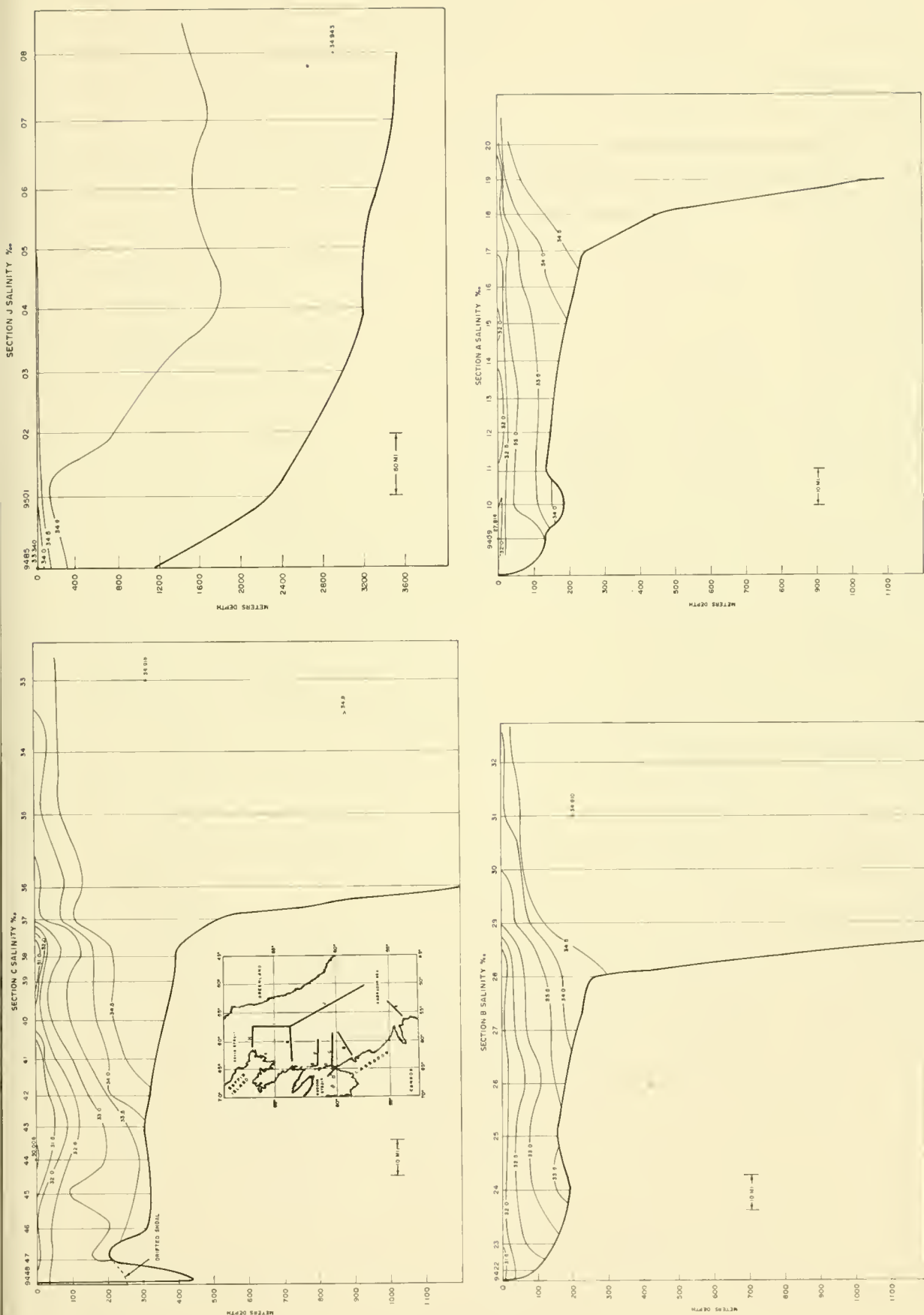


Figure 15. Salinity distribution (%) in the sections located in the southwestern and central Labrador Sea.

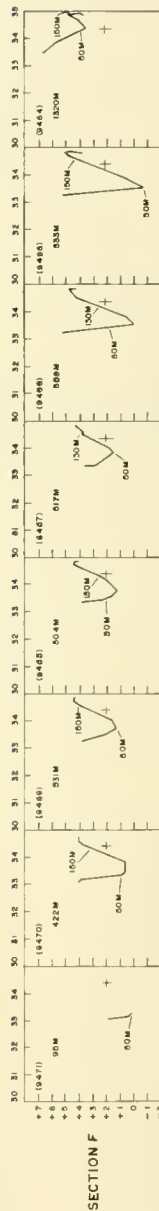
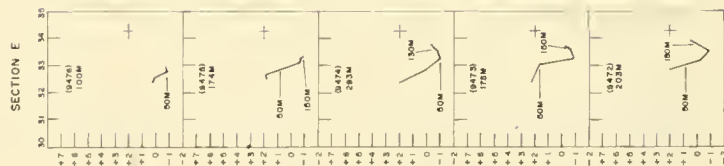
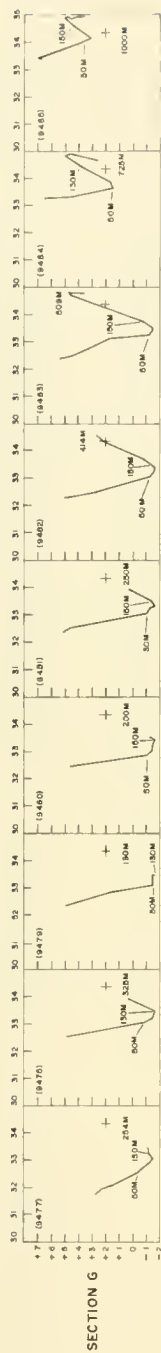


Figure 16. Temperature-salinity diagrams for sections G, F, and I obtained in the vicinity of the entrance of Hudson Strait.

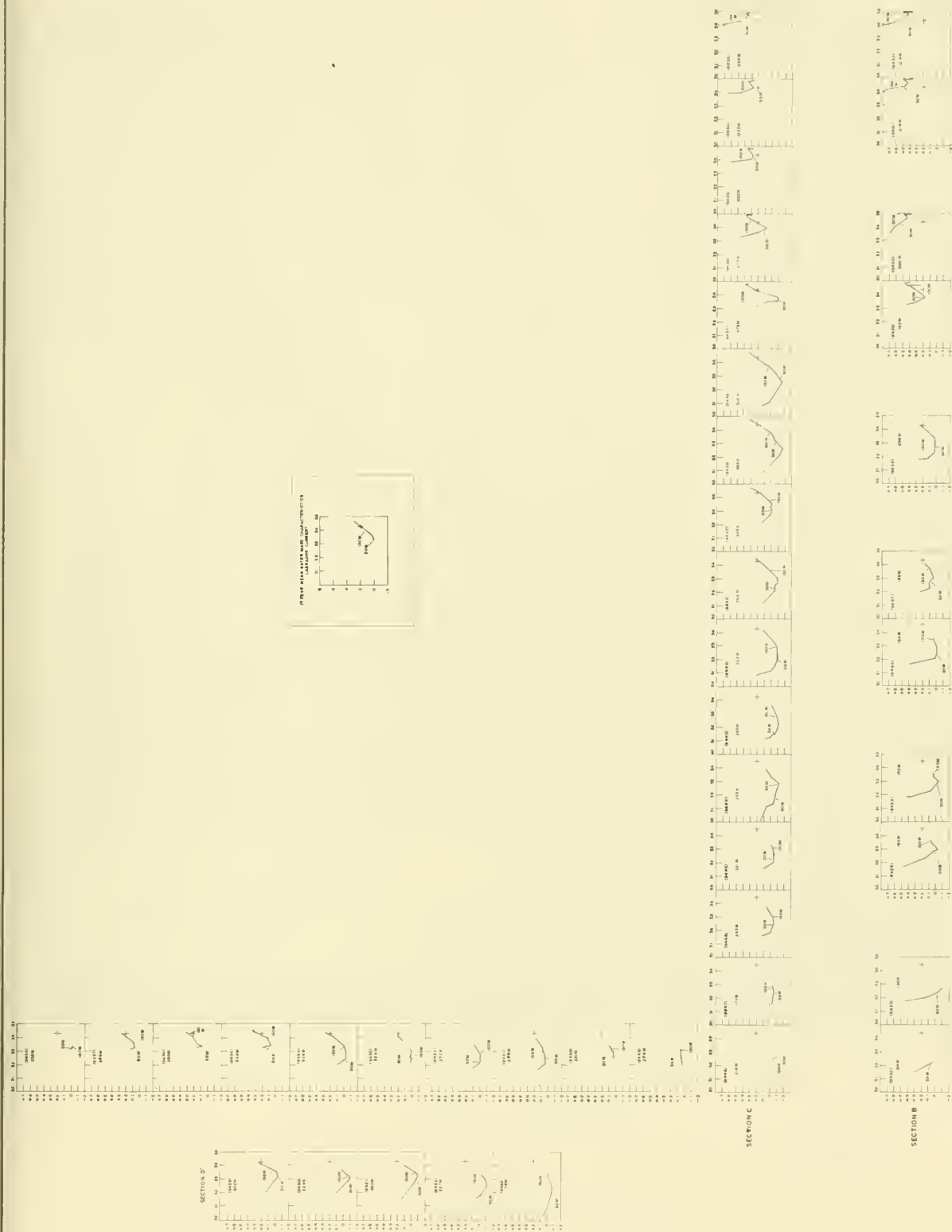


Figure 17. Temperature-salinity diagrams for sections D', D, C, and B obtained in the vicinity of the entrance of Hudson Strait.

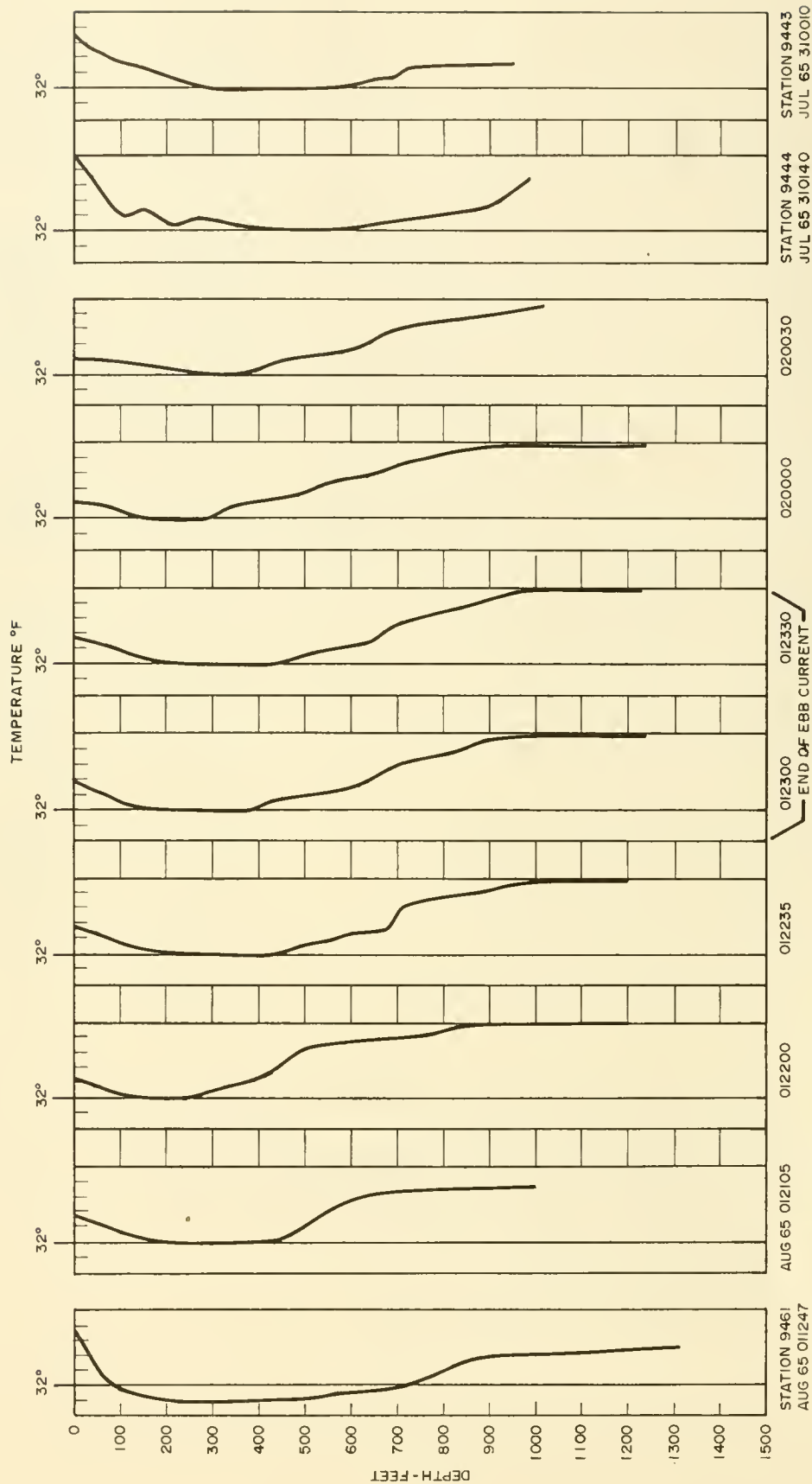


Figure 18. Electronic bathythermograph records from station 9461, section D'; 9443, 9444, section C; and a fixed location 8 miles north of Cape Chidley in the entrance to Hudson Strait.

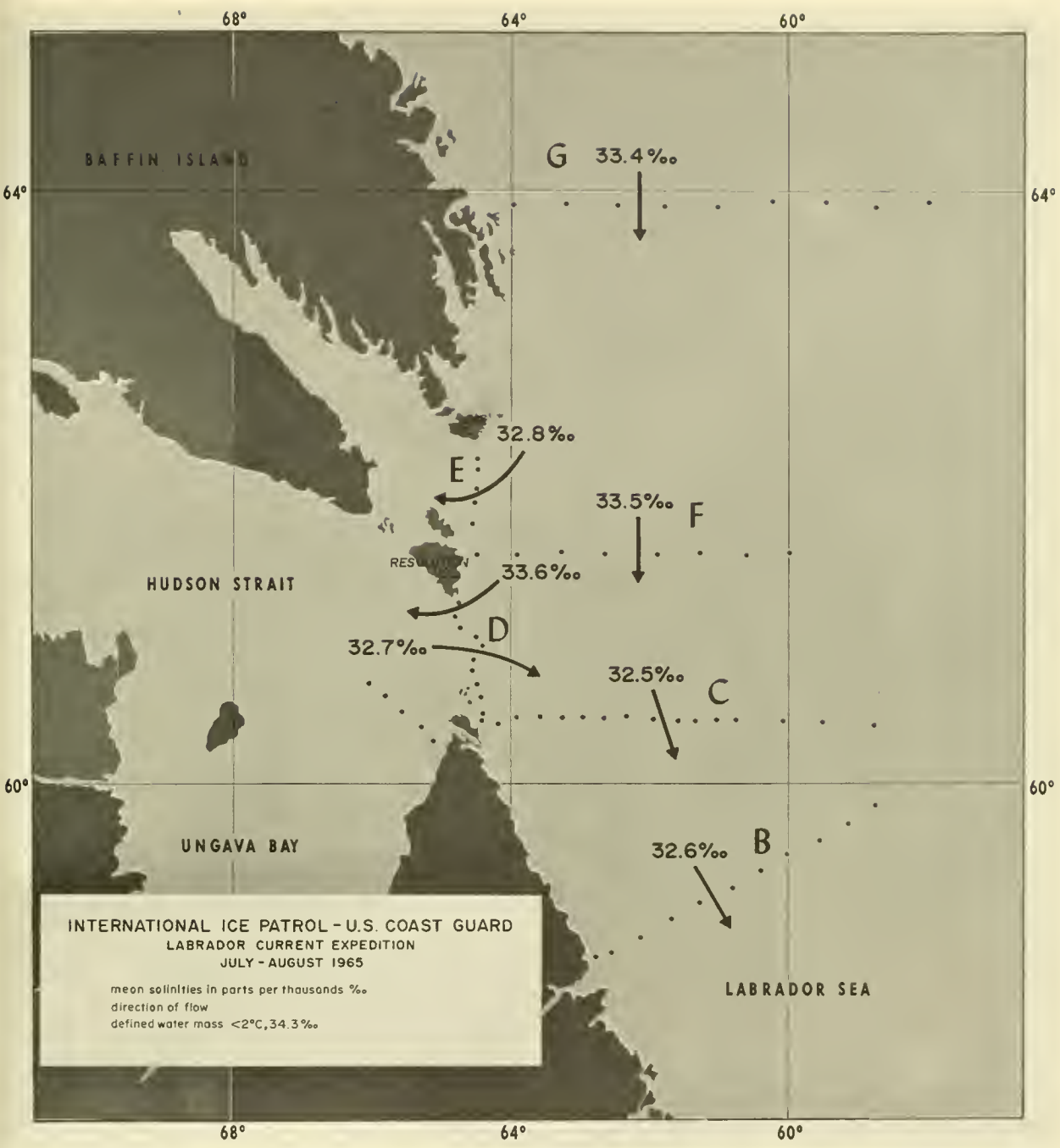


Figure 19. Mean salinity values in ‰ of the water flowing through the sections obtained in the vicinity of the entrance of Hudson Strait.



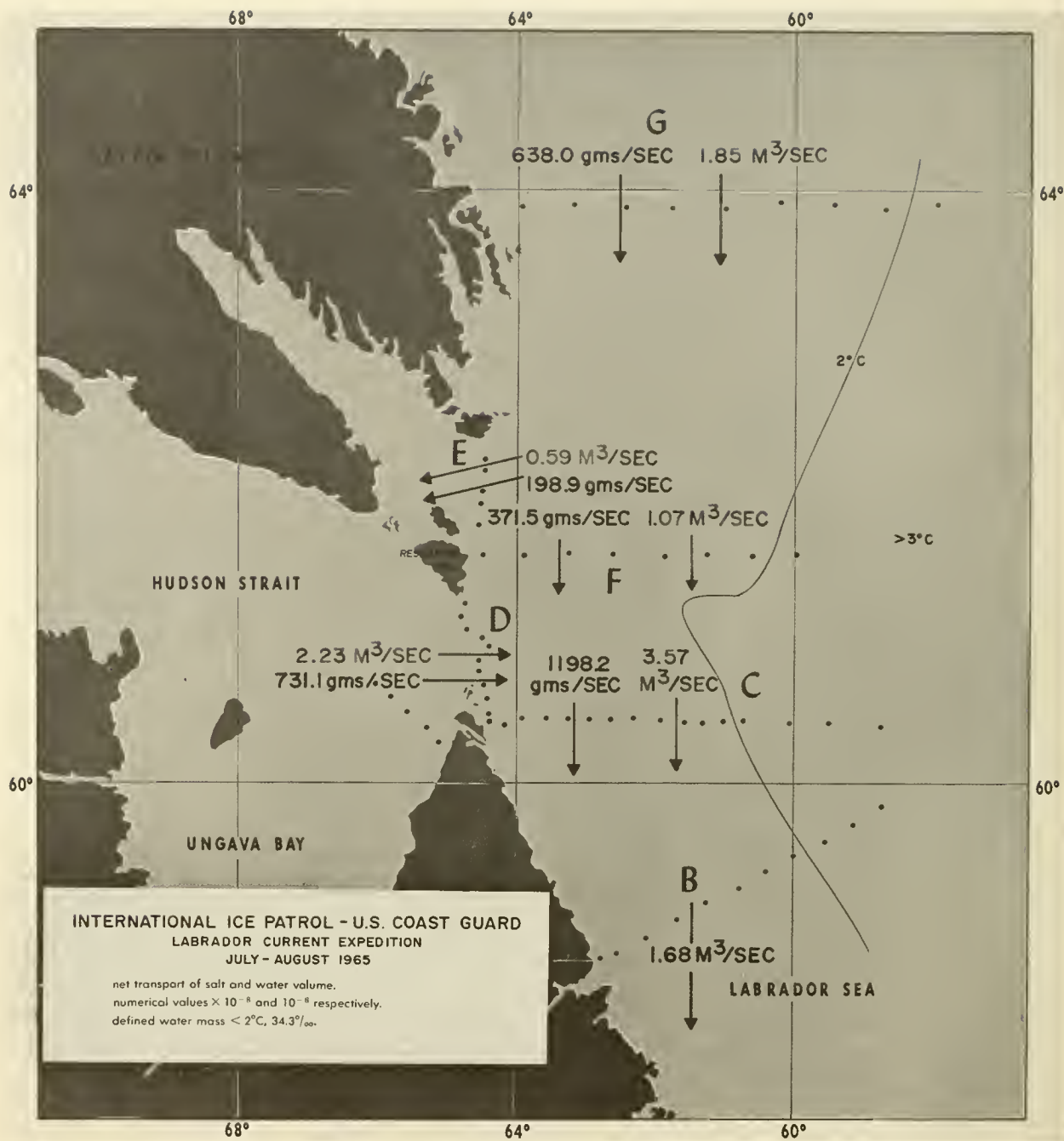


Figure 20. Net volume flow and salt transport through the sections obtained in the vicinity of the entrance of Hudson Strait.

# Nutrient Distribution Along the Labrador and Baffin Island Coast, 1965

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Interest in the oceanographic conditions of the Labrador Sea has greatly intensified in recent years, as the important relationship of this area to the western North Atlantic has been demonstrated. For many years the standard section from South Wolf Island, Labrador to Cape Farewell, Greenland has been occupied by the U.S. Coast Guard in a post season cruise by the Ice Patrol. Analysis of this section has shown the presence of coastal currents near Labrador with markedly different characteristics from the offshore water masses. The nutrient chemistry of this standard section has been examined by the present authors in recent years and show a similar abrupt transition between the coastal and offshore conditions. While recent Soviet research reports (VNIRO-PINRO, 1960; 1962) have given information on the chemistry and biology of the region south of the standard section along the Newfoundland coast and banks, details on the coastal conditions in northern Labrador and Baffin Island have been lacking. Accordingly, the 1965 post season Ice Patrol survey was planned to provide data on coastal sections from South Wolf Island, Labrador to the margin of the Baffin Sea basin. The report on the nutrient chemistry for the coastal waters surveyed which is given here greatly augments the available observations, especially in the Hudson Strait and Ungava Bay area, which has been previously little studied (Dunbar, 1951).

## METHODS

The analytical techniques have been given in previous reports, especially McGill and Corwin (1965) where references to individual methods may be found. Frozen samples collected during the Ice Patrol Post Season Survey were stored until analysis could be undertaken in Woods Hole.

The assistance of John Schilling and Mrs. Juanita Mogardo is again gratefully acknowledged. The nutrient data are published in this volume along with the other observations at each station. Since relatively little detail exists in the contours of these sections due to the greatly restricted depths along the continental shelf, profiles of all the distributions are not given. Only the nitrite-nitrogen profiles are shown and the significance of these is discussed below. The other distribution patterns are described verbally. The locations of the sections mentioned are shown on the inset maps accompanying figures 1 and 2.

## DISTRIBUTION OF NUTRIENTS

Inorganic phosphate-phosphorus values near 0.5  $\mu\text{gA}/1$  at the surface along the coast occur throughout the area. In the southern sections, the surface phosphate concentration decreases at the offshore extremity to values near 0.20  $\mu\text{gA}/1$ . A concentration of 1.00  $\mu\text{gA}/1$  is reached near a depth of 200 meters in all sections. Along the continental slope in deep water the phosphate level increases to about 1.10  $\mu\text{gA}/1$ . Sections A, B, and C—south of Hudson Strait—show a value of about 0.90  $\mu\text{gA}/1$  at 100 meters on the continental shelf. This general pattern also occurs in section D across the mouth of Hudson Strait. The small decline in surface values at stations 9455–9457 (at the northern end of the section) relative to the remainder of the section may possibly indicate the westward-moving inflow to the Hudson Strait. Section D' representing Ungava Bay (see map) has relatively high phosphate concentrations: 1.00  $\mu\text{gA}/1$  occurs near 100 meters and occupies the remainder of the basin except where a near-shore current is suggested at stations 9463. Sections E and F are generally similar to section D. In section G a bubble of phosphate greater than 1.00  $\mu\text{gA}/1$  is found at about 50 meters and this may represent the outflow from Davis Strait in a current moving southwestward toward the coast after exchanges with Baffin

<sup>1</sup> Contribution No. 1838 from the Woods Hole Oceanographic Institution. This work was supported in part by the Office of Naval Research under contract Nonr-2196(00) NR-083-004.

Bay water. Section H is clearly much different from the other sections, being north of the sill at Davis Strait. The increase of nutrient concentrations in deep water below the sill depth is indicated by phosphate values of greater than  $1.20 \mu\text{gA}/1$ .

Total phosphorus distribution is consistent with the pattern just described for the inorganic phosphate. Values average  $0.10$  to  $0.20 \mu\text{gA}/1$  greater than inorganic readings, especially near the surface and in the areas near shore or over the continental shelf. Section D again suggests an inflow to Hudson Strait with lower total phosphorus values on the northern side and an outflow from Ungava Bay on the southern side having higher values. The high nutrient level at 50 meters in Section G persists. In Baffin Bay (section H) the pattern is extremely complex: The water below sill depth shows a total phosphorus concentration over  $1.30 \mu\text{gA}/1$  and near stations 9499 and 9500, on the landward end of the profile, total phosphorus values greater than  $1.50 \mu\text{gA}/1$  are found. As in the other sections, the variations in near-surface values found here between individual stations is presumably due to phosphorus in biological combination.

The organic phosphorus is derived as the difference of the observations on total and inorganic concentrations. These values are also reported with the data tables which accompany this volume. Values of organic phosphorus greater than  $0.20 \mu\text{gA}/1$  occur at the surface in section A, B, and C and again at G and H. The continental shelf in A, B, and C has organic phosphorus values from  $0.10$  to  $0.20 \mu\text{gA}/1$  while lower tend to be found in the deeper water offshore along the continental slope. Similarly low values are found in section F although at section G the organic phosphorus level increases again. These data are perhaps best handled statistically, as in the following section.

The nitrate-nitrogen distribution in all sections is well stratified. Zero surface values increase to  $5.0 \mu\text{gA}/1$  at 50–75 meters and values of  $10 \mu\text{gA}/1$  occur by about 200 meters. The offshore deep waters on the continental slope in sections A, B, and C show a continued increase in nitrate concentration to values greater than  $15 \mu\text{gA}/1$ . Similar high values are found below 300 meters in sections F and I and at station 9485 in section G. Relatively low nitrate concentrations are found in the Hudson Strait and Ungava areas.

Nitrite-nitrogen distribution are reported separately from the values for nitrate concentration.

The nitrite concentrations are also shown in figures 1 and 2. In the stations in the Baffin Bay area, section H, the high nitrite values are found close to the surface. In the other sections, the only statistically significant values are grouped near 100 meters, with the highest values in all cases occurring on the seaward end of the profile, especially in the southern end of the Labrador Sea (fig. 2). Low nitrite concentrations with a very indefinite pattern of distribution, found in the section for Hudson Strait and Ungava Bay (sections D and D', fig. 2), contrast with the strongly emphasized peak concentrations for the Labrador Sea.

The silicate-silicon distribution also shows considerable horizontal stratification from values less than  $5 \mu\text{gA}/1$  at the surface to concentrations of about  $10 \mu\text{gA}/1$  at 100 meters. Higher values occur in deep offshore water of section A, B, and C. The silicate level on the continental shelf in section C is slightly reduced, which may relate to the low values (less than  $10 \mu\text{gA}/1$ ) found also in section D at the entrance of Hudson Strait. The Ungava Bay area (section D'), on the other hand, shows silicates greater than  $10 \mu\text{gA}/1$  below 100 meters. Stratification is well marked in sections F and G, though the high nutrient level in section G recurs in the silicate concentrations at about 100 meters on stations 9479–9482. High silicates, up to values greater than  $30 \mu\text{gA}/1$ , are found in the deep water of section I. Such values are characteristic of Baffin Bay at the depth below the sill (McGill and Corwin, 1962).

## DISCUSSION

Analytical results for the various nutrient determinations from the coastal sections near Labrador and Baffin Island are in good agreement with each other. The nutrient concentrations show a general increase with depth. A simple regression analysis gives ratios by atoms for the relative changes in nutrient concentration in each section, as reported in table I, which also gives the 95 percent confidence intervals as determined in Simpson (1960). The  $\Delta N : \Delta P$  ratio is in general agreement with the value of 16:1 which is widely accepted despite the variations in some regions which are discussed by Armstrong (1965). Section D', in Ungava Bay, is the only area of this survey with a marked change from this value. A considerable reduction is found in Ungava Bay—the value obtained is equivalent to winter values



for regions such as Long Island Sound (Riley and Conover, 1956) and New England coastal surface waters (Ketchum et al. 1958).

The  $\Delta Si : \Delta P$  ratios in table I are more variable from section to section. The highest ratio occurs in the Baffin Bay waters of section H, where silicate accumulates below sill depth. The value found agrees with our previous observations (Corwin and McGill, 1965). By contrast, a low value is obtained for section F. Without biomass measurements or productivity estimates, this variation in the coastal sections cannot be correlated with any changes in populations, though this is one obvious agent affecting  $\Delta Si : \Delta P$  through growth of phytoplankton skeletons and other metabolic changes. Land drainage might augment the local supplies, as in section E where the  $\Delta Si : \Delta P$  ratio is slightly increased, but this effect likewise cannot be estimated from available information.

The  $\Delta Si : \Delta P$  and  $\Delta N : \Delta P$  ratios do not vary consistently together, which adds to the difficulty of interpretation. In data of previous years for the section from South Wolf Island to Cape Farewell, Greenland, which includes the deep water offshore, the  $\Delta Si : \Delta N : \Delta P$  has been in good agreement with the theoretical ratio of change in sea water (see McGill and Corwin, 1965). It is probable that biological assimilation in the surface waters near shore acts as a differential agent to alter the ratios selectively, while process of regeneration in deep water of the main Labrador Sea restore the nutrient quantities to solution. In the coastal sections surveyed in 1965 assimilative processes predominate, thus producing the variable ratios given in table I.

TABLE I. Relative changes in concentration among the nutrient elements in coastal sections near Labrador and Baffin Island

Area	$\Delta Si$	$\Delta N$	$\Delta P$
Section:			
I-----	23. 82 $\pm$ 3. 42( 87)	16. 40 $\pm$ 3. 16( 87)	1
G-----	13. 39 $\pm$ 2. 40( 58)	15. 02 $\pm$ 3. 64( 58)	1
F-----	9. 27 $\pm$ 0. 80( 50)	17. 62 $\pm$ 1. 87( 50)	1
E-----	16. 89 $\pm$ 3. 53( 26)	15. 95 $\pm$ 7. 21( 25)	1
D-----	10. 15 $\pm$ 3. 05( 82)	15. 57 $\pm$ 2. 88( 82)	1
D'-----	11. 18 $\pm$ 0. 87( 52)	9. 45 $\pm$ 1. 75( 52)	1
C-----	11. 88 $\pm$ 0. 93(160)	18. 14 $\pm$ 1. 76(159)	1
B-----	10. 87 $\pm$ 1. 40( 95)	18. 10 $\pm$ 2. 99( 95)	1
A-----	13. 01 $\pm$ 1. 17(106)	17. 31 $\pm$ 1. 89(106)	1

NOTE.—The number of data pairs used in the regression is given in parentheses. Nnety-five percent confidence intervals are calculated from Simpson et al., 1960.

Organic phosphorus distribution is perhaps best represented as a frequency distribution. The statistical parameters resulting from such treatment are given in table II. The mean value given includes observations from all depths on the sec-

TABLE II. Distribution of total organic phosphorus for coastal sections near Labrador and Baffin Island, arranged as a frequency distribution and with 95 percent confidence interval calculated for the mean in each section

Area	Data	Frequency distribution values	95 percent confidence interval
Section I-----	$n$ -----	58	
9493-9500	$x$ -----	0. 1716	$\pm$ 0. 0533
	$s^2$ -----	. 0393	
	$s$ -----	. 1982	
	$s/\sqrt{n}$ -----	. 0260	
Section G-----	$n$ -----	86	
9477-9485	$x$ -----	. 1645	$\pm$ . 0408
	$s^2$ -----	. 0362	
	$s$ -----	. 1903	
	$s/\sqrt{n}$ -----	. 0205	
Section F-----	$n$ -----	50	
9464-9471	$x$ -----	. 1210	$\pm$ . 0346
	$s^2$ -----	. 0147	
	$s$ -----	. 1211	
	$s/\sqrt{n}$ -----	. 0171	
Section E-----	$n$ -----	26	
9471-9474	$x$ -----	. 1231	$\pm$ . 0753
	$s^2$ -----	. 0346	
	$s$ -----	. 1856	
	$s/\sqrt{n}$ -----	. 0365	
Section D-----	$n$ -----	83	
9448-9458	$x$ -----	. 1560	$\pm$ . 0340
Mouth of Hudson Strait	$s^2$ -----	. 0243	
	$s$ -----	. 1560	
	$s/\sqrt{n}$ -----	. 0171	
Section D'-----	$n$ -----	42	
9459-9463	$x$ -----	. 1667	$\pm$ . 0568
UnGava Bay	$s^2$ -----	. 0331	
	$s$ -----	. 1820	
	$s/\sqrt{n}$ -----	. 0281	
Section C-----	$n$ -----	158	
9435-9448	$x$ -----	. 1845	$\pm$ . 0323
	$s^2$ -----	. 0428	
	$s$ -----	. 2069	
	$s/\sqrt{n}$ -----	. 0165	
Section B-----	$n$ -----	92	
9422-9432	$x$ -----	. 1707	$\pm$ . 0362
	$s^2$ -----	. 0306	
	$s$ -----	. 1749	
	$s/\sqrt{n}$ -----	. 0182	
Section A-----	$n$ -----	106	
9409-9420	$x$ -----	. 1637	$\pm$ . 0330
	$s^2$ -----	. 0292	
	$s$ -----	. 1709	
	$s/\sqrt{n}$ -----	. 0166	

tion. Highest organic phosphorus values are found in the surface waters in all sections. The mean value from section to section shows only limited variation, the most marked change occurring in sections E and F. It is possible that the decrease there from the level of organic phosphorus observed in all other sections represents some local excess in land runoff or drainage. No noticeable difference is seen in Ungava Bay or Hudson Strait from values along the Labrador and Baffin Island coast. The coastal concentrations of mean organic phosphorus are somewhat in excess of values reported for the full section across the Labrador Sea to Greenland. They are less than observations of 1964 in the area of Kane Basin and Smith Sound.

Vaccaro and Ryther (1960) have pointed out that high concentrations of nitrite-nitrogen in natural waters mark locations where important biologically induced changes in combined nitrogen are progressing. The assimilation of nitrate-nitrogen by marine phytoplankton is often accompanied by the production of significant amounts of extracellular nitrite. Increasing concentrations of nitrite can be expected in the upper layers of the ocean when an adequate standing crop of phytoplankton is present and an excess of nitrate is available. Such conditions are characteristic of the summer season in the Labrador Sea. The nitrite-nitrogen distributions shown in figure 1 indicate that this biological activity is concentrated in surface waters off the continental shelf and seaward of the continental slope. This is the same pattern as obtained in previous years in the Labrador Sea (see Corwin and McGill, 1963). In the absence of other data, this distribution pattern can serve as an indication of the relative production in these coastal sections. Hopefully, direct measurements will be attempted in the future and the relation of biological and chemical parameters made more evident for this region.

Nutrient distribution patterns can also be examined for indication of local currents and water masses. In general, the distribution of phosphate, nitrate, and silicate is consistent with the pattern of surface currents given by Dunbar (1951). This is particularly true in the Hudson Strait area, where a segment of the Labrador Current enters along the Baffin Island coast and an outflow to the Labrador Sea occupies the area near the Quebec coast. Such a pattern is indicated by the nutrients in section D. This circulation has given

evidence in the past of an increased Atlantic influence from 1930 to 1948, as demonstrated by both physical and biological criteria (Dunbar, 1951). Increased penetration by Atlantic water would tend to raise the nutrient levels slightly and such exchange might represent one factor in long-term budgets for the area. The nutrient quantities would also be involved in any "feedback" mechanism as proposed by Dunbar (1951) regulating water balance between parts of the Arctic Basin and the Labrador Sea.

The general pattern of distribution in the coastal sections in the Labrador Sea suggests a phenomenon analogous to the persistence of "winter water" on the continental shelf in temperate latitudes (Ketchum and Corwin, 1963). Observations for other periods of the year are needed to detail the sequence of changes taking place on the continental shelf. The available nutrient observations indicate a distinct change between onshore and offshore water but give only limited details to characterize the circulation. Russian observations on zooplankton populations suggest some systematic shift of boreal and warm water forms by season (Vladimirskaia, 1965), but agree that the higher biomass is found in the boreal fauna.

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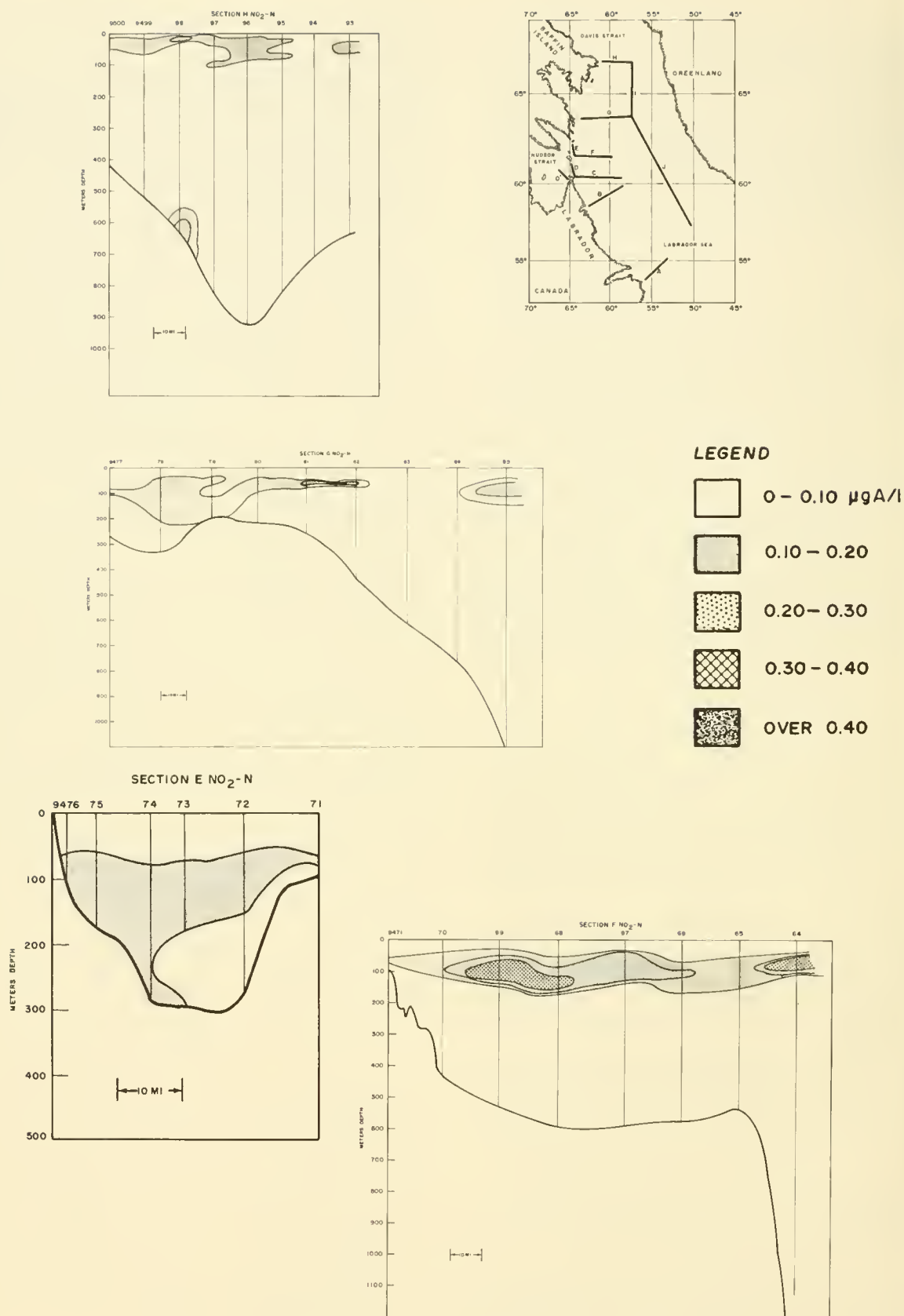


Figure 1. Vertical distribution of nitrite-nitrogen, sections E, E, G, and H.

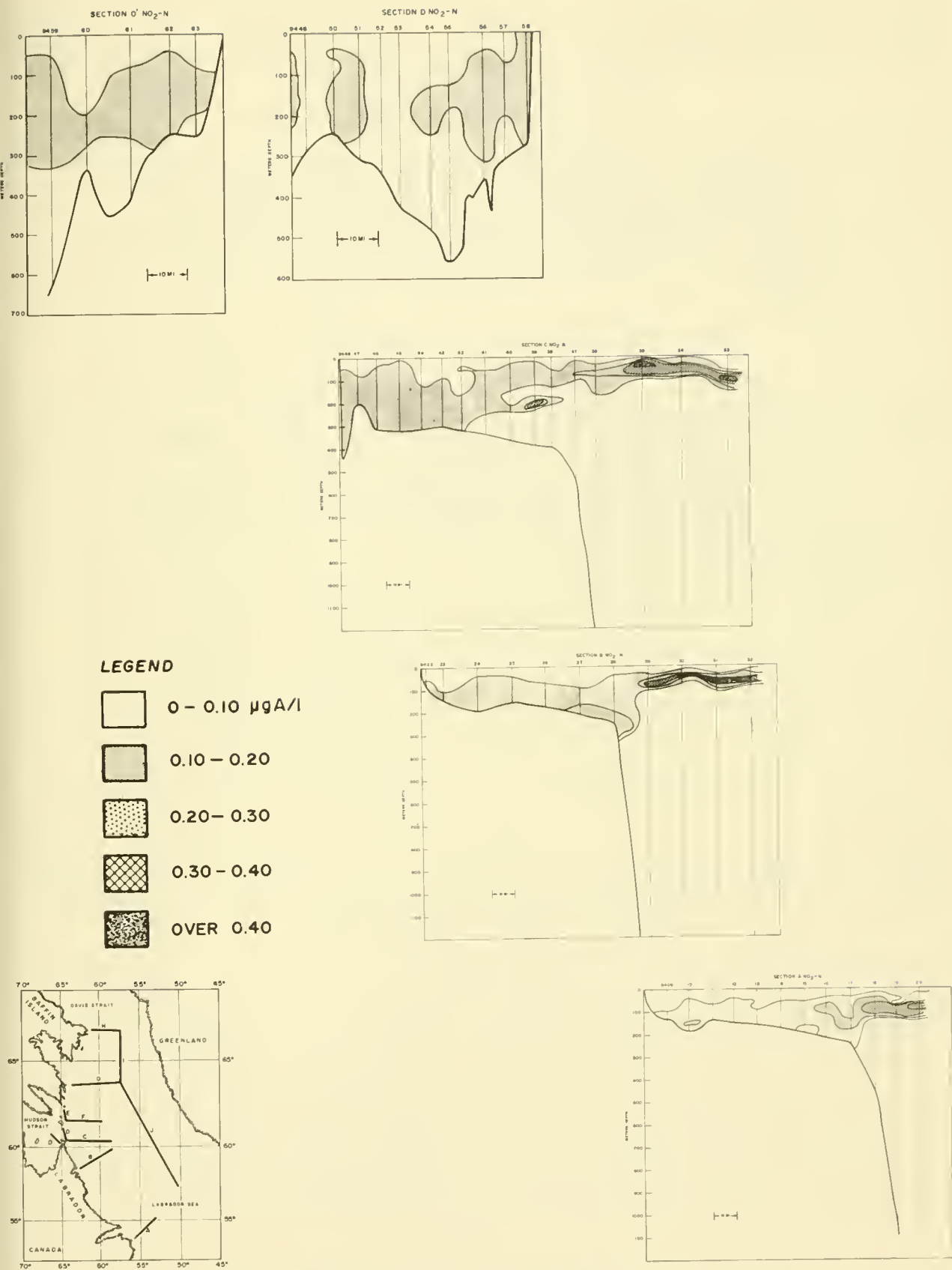


Figure 2. Vertical distribution of nitrite-nitrogen, sections A, B, C, D, and D'.

## TABLE OF OCEANOGRAPHIC DATA

The following is the observed and interpolated data for the Coast Guard Oceanographic Unit oceanographic stations taken in conjunction with the International Ice Patrol 1965, Post Season Cruise in the Labrador Sea area. The data was obtained from CGC EVERGREEN during July and August 1965. Presentation is from National Oceanographic Data Center Cruise Listing No. 31-549.

### Notes:

Depth to bottom—uncorrected sounding depth in meters based on a speed of sound in sea water of 4,800 ft./sec.

Depth (m)—postscript *T* indicates a depth determined by thermometric calculations.

Sound velocity—in meters per second to tenths according to Wilson's formula.

A complete description of codes can be found in NODC publication M-2, "Processing Physical and Chemical Data From Oceanographic Stations."



REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT	
31	549	EV	53487N	05543 W		186	35	07	25	019	1965	LCE 9409	0128	01	16	3	2		X1	4	2	0001	
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL											
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB	WET BULB																		
		17	S16	058	111	106	7	07															

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta \sigma$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	Si O <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH	S C C
		STD	0000	0888	2781	2155	0062629	0000	14770	715							
019	08S	0000	0888	27814	2155				14770	715	031	057	004	003	008		
	STD	0010	0073	3219	2583	0021784	0042	14489	839								
019	08S	0010	0073	32192	2583			14489	839	059	079	005	013	003			
	STD	0020	-0054	3243	2608	0019400	0063	14436	793								
019	08S	0024	-0089	32505	2615			14421	780	085	101	007	039	006			
	STD	0030	-0093	3253	2617	0018497	0082	14420	774								
019	08S	0049	-0106	32603	2624			14418	763	092	107	009	046	007			
	STD	0050	-0107	3261	2624	0017858	0118	14418	763								
019	08S	0073	-0120	32681	2630			14417	762	097	114	009	042	008			
	STD	0075	-0121	3270	2632	0017079	0162	14417	760								
019	08S	0098	-0127	32872	2646			14420	742	101	117	010	076	011			
	STD	0100	-0126	3288	2647	0015669	0203	14422	741								
019	08S	0123	-0111	33004	2656			14434	733	103	115	011	082	011			

REFERENCE		SHIP CODE	LATITUDE 1°/10	LONGITUDE 1°/10	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR	HGT	PER		SEA	TYPE		AMT
31	549	EV	53555N	055315W		186	35	07	25	035	1965	LCE 9410	0183	02	13	1	2		X0	0		0002	
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTH	SPECIAL OBSERVATIONS											
COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	DRY BULB	WET BULB																		
		17	S10	044	100	094	7	09															

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta \sigma$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	Si O <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH	S C C
		STD	0000	0661	3200	2514	0028378	0000	14736	727							
035	08S	0000	0661	32004	2514			14736	727	038	058	002	000	002			
035	08S	0005	0665	31935	2508			14737	726	039	055	002	000	001			
	STD	0010	0466	3218	2550	0024898	0027	14660	782								
	STD	0020	0164	3259	2609	0019289	0049	14537	869								
035	08S	0025	0060	32753	2629			14493	900	060	095	006	006	004			
	STD	0030	0056	3286	2637	0016599	0067	14494	871								
	STD	0050	0016	3318	2665	0013976	0097	14483	783								
035	08S	0050	0016	33177	2665			14483		085	099	011	049	007			
	STD	0075	-0088	3329	2678	0012682	0131	14441	730								
035	08S	0075	-0088	33288	2678			14441	730	104	113	015	085	011			
	STD	0100	-0056	3346	2691	0011463	0161	14462	742								
035	08S	0100	-0056	33462	2691			14462	742	096	108	015	083	009			
	STD	0125	0013	3370	2707	0009961	0188	14501	724								
	STD	0150	0084	3393	2722	0008624	0211	14541	712								
035	08S	0150	0084	33929	2722			14541	712	094	104	024	103	010			
035	08S	0165	0127	34065	2730			14565	707	098	107	019	106	010			
035	08S	0175	0201	34287	2742			14602	679	101	110	010	118	011			

REFERENCE		SHIP CODE	LATITUDE 1°/10	LONGITUDE 1°/10	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR	HGT	PER		SEA	TYPE	
31	549	EV	54018N	05520 W		186	45	07	25	048	1965	LCE 9411	0137	01	13	0	2		X0	0		0003
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTH	SPECIAL OBSERVATIONS										
COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	DRY BULB	WET BULB																	
		17	S14	041	094	089	7	07														

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta \sigma$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	Si O <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH	S C C
		STD	0000	0624	3208	2524	0027351	0000	14722	733							
048	08S	0000	0624	32082	2524			14722	733	048	076	002	002	002			
	STD	0010	0621	3208	2525	0027319	0027	14722	737								
048	08S	0010	0621	32083	2525			14722	737	043	062	001	000	002			
	STD	0020	0343	3242	2581	0021941	0052	14613	822								
048	08S	0025	0230	32559	2602			14567	844	043	067	003	000	003			
	STD	0030	0145	3267	2617	0018560	0072	14531	817								
	STD	0050	-0073	3302	2656	0014784	0106	14440	744								
048	08S	0050	-0073	33022	2656			14440	744	094	106	009	069	009			
	STD	0075	-0074	3325	2674	0013062	0140	14447	733								
048	08S	0075	-0074	33245	2674			14447	733	098	110	013	085	011			
	STD	0100	-0059	3345	2690	0011580	0171	14461	734								
048	08S	0100	-0059	33445	2690			14461	734	100	110	017	088	011			
	STD	0125	-0022	3362	2702	0010398	0199	14484	733								
048	08S	0132	-0008	33662	2705			14492	732	097	109	017	085	010			

REFERENCE CTRY CODE	IO. NO.	SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DATE MO DAY HR.1/10	MARSON SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER		
						10"	1'	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	NGT		PER	SEA		TYPE	AMT
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		BARO- METER (mb)												
31	549	EV	54106N	055095W	186	45	07	25	066	1965	LCE	9412	0149	01	15	0	2		X0		0		0004
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
COLOR CODE		TRANS. (m)	DIR.	SPEED OR FORCE	DIR.	SPEED OR FORCE	DRY BULB	WET BULB															
				17	S16	037			094	089	7	07											
MESSAGE TIME HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$		$\Sigma \Delta \theta$ DYN. M. $\times 10^3$	SOUND VELOCITY		O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} \cdot \text{ml}^{-1}$	TOTAL-P $\mu\text{g} \cdot \text{ml}^{-1}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{ml}^{-1}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{ml}^{-1}$	SiO <sub>4</sub> -Si $\mu\text{g} \cdot \text{ml}^{-1}$	pH				
066		STD	0000	0619	3185	2507		0029045		0000	14717		728										
		OBS	0000	0619	31848	2507					14717		728	038	064		003	000	002				
066		STD	0010	0616	3185	2507		0029028		0029	14717		729										
		OBS	0010	0616	31847	2507					14717		729	037	065		002	000	002				
066		STD	0020	0274	3223	2572		0022808		0055	14580		806										
		OBS	0025	0143	32392	2595					14526		825	053	079		005	006	003				
066		STD	0030	0065	3253	2610		0019161		0076	14493		799										
		STD	0050	-0112	3296	2653		0015129		0110	14421		735										
066		OBS	0050	-0112	32960	2653					14421		735	104	112		012	038	010				
		STD	0075	-0033	3322	2670		0013447		0146	14465		746										
066		OBS	0075	-0033	33216	2670					14465		746	096	118		013	068	009				
		STD	0100	-0022	3343	2687		0011854		0178	14478		732										
066		OBS	0100	-0022	33430	2687					14478		732	085	093		015	082	009				
		STD	0125	-0016	3361	2701		0010503		0206	14487		720										
066		OBS	0149	-0016	33751	2713					14493		710	098	112		016	102	012				

REFERENCE	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DATE MO DAY HR.1/10	MARSON SQUARE	STATION TIME (GMT)	YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER	
								CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	549	EV	54186N	054589W	186	44	07 25 083	1965	LCE 9413	0159	01	16	2	2		X4	7	8		0005
				WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
COLOR CODE		TRANS. (m)	DIR.	SPEED OR FORCE	DIR.	SPEED OR FORCE	DRY BULB		WET BULB											
				17	S14	030			078	078	0	07								
MESSAGE TIME HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> °	Σ Δ θ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>3</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	S	C		
		STD	0000	0622	3160	2487	0030916	0000	14715	729										
	083	OBS	0000	0622	31603	2487			14715	729	038	066	001	000	002					
		STD	0010	0580	3172	2501	0029537	0030	14701	741										
	083	OBS	0010	0580	31724	2501			14701	741	038	057	001	000	002					
		STD	0020	0156	3241	2595	0020605	0055	14531	799										
	083	OBS	0025	0008	32660	2624			14668	814	067	087	005	022	004					
		STD	0030	-0021	3271	2629	0017381	0074	14456	796										
		STD	0050	-0084	3295	2651	0015281	0107	14434	747										
	083	OBS	0050	-0084	32952	2651			14434	747	091	108	010	062	008					
	083	OBS	0074	-0043	33288	2677			14462	741	085	098	009	071	008					
		STD	0075	-0042	3329	2677	0012844	0142	14462	741										
	083	OBS	0098	-0028	33430	2687			14474	732	085	104	014	073	010					
		STD	0100	-0027	3344	2688	0011755	0173	14475	731										
		STD	0125	-0016	3357	2698	0010808	0201	14486	722										
	083	OBS	0148	-0011	33669	2706			14494	714	097	109	017	097	012					

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DATE MO DAY HR.1/10	MARSON SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER
CRUISE NO.	STATION NUMBER					10'	1"	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT PER SEA		TYPE	AMT	
31	549	EV	54265N	054468W	186	44	07 25 101	1965	LCE	9414	0173	02	17	2 2			X4	7 8		0006	
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS			
						COLOR CODE		TRANS. (m)		DIR.		SPEED OR FORCE		DRY BULB		WET BULB					
								17		S14		034		078		078		0 07			
MESSAGE TIME HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ θ DYN. M. X 10 <sup>3</sup>		SOUND VELOCITY		O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>3</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	
		STD	0000	0607	3210	2528		0027010		0000		14715		730							
	101	OBS	0000	0607	32101	2528						14715		730	040	062	003	000	002		
		STD	0010	0604	3210	2528		0026986		0027		14716		730							
	101	OBS	0010	0604	32101	2528						14716		730	040	063	003	000	002		
		STD	0020	0297	3256	2597		0020495		0051		14595		812							
	101	OBS	0025	0180	32736	2620						14547		835	047	068	002	002	003		
		STD	0030	0120	3282	2630		0017265		0070		14522		820							
		STD	0050	-0031	3309	2660		0014427		0101		14460		771							
	101	OBS	0051	-0035	33103	2661						14459		769	091	102	010	062	008		
		STD	0075	-0011	3330	2676		0012904		0135		14477		740							
	101	OBS	0076	-0010	33310	2677						14477		739	085	099	012	076	009		
		STD	0100	-0047	3348	2692		0011363		0166		14467		739							
	101	OBS	0102	-0049	33490	2693						14466		739	094	105	014	074	009		
		STD	0125	-0014	3363	2703		0010358		0193		14488		734							
		STD	0150	0023	3377	2712		0009479		0218		14511		724							
	101	OBS	0173	0058	33876	2719						14532		710	096	111	020	082	011		

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	MARS SQUARE	STATION TIME				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NOCC STATION NUMBER	
CTRY CODE	IO. NO.					10"	1"	MO DAY HR.1/10	CRUISE NO.		STATION NUMBER	OBSERVATIONS				TYPE	AMT						
												DIR.			NGT			PER		SEA			
31	549	EV	54338N	054348W	186	44	07	25	118	1965	LCE	9415	0192	02	15	3	4		X4	7	8		0007
		WATER		WIND		BARO- METER		AIR TEMP. °C		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS											
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB	WET BULB	VIS CODE															
				17	520	034	078	078	0	08													
MESSNGR TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S %.	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> ?	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	3 CCT						
		STD	0000	0590	3196	2518	0027909	0000	14706	732													
118		OBS	0000	0590	31955	2518			14706	732	039	059	000	000	002								
		STD	0010	0504	3219	2547	0025183	0027	14676	759													
118		OBS	0010	0504	32194	2547			14676	759	038	060	002	000	002								
		STD	0020	0164	3277	2624	0017922	0048	14539	793													
118		OBS	0025	0043	32979	2648			14489	800	067	091	008	027	005								
		STD	0030	0009	3304	2654	0014993	0065	14475	780													
		STD	0050	-0075	3323	2673	0013215	0093	14442	728													
118		OBS	0050	-0075	33226	2673			14442	728	102	112	010	085	010								
		STD	0075	-0061	3336	2683	0012209	0125	14454	728													
118		OBS	0075	-0061	33363	2683			14454	728	105	131	013	149	011								
		STD	0100	-0051	3350	2694	0011186	0154	14465	730													
118		OBS	0100	-0051	33501	2694			14465	730	096	109	015	103	010								
		STD	0125	0012	3374	2711	0009651	0180	14502	727													
		STD	0150	0062	3390	2721	0008710	0203	14531	723													
118		OBS	0150	0062	33900	2721			14531	723	098	104	017	112	010								
118		OBS	0175	0098	33996	2726			14552	705	092	110	004	115	011								

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	MARS SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOCC STATION NUMBER		
CTRY CODE	IO. NO.					10"		MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT		PER	SEA		TYPE	AMT
31	549	EV	54413N	054227W	186	44	07	25	137	1965	LCE	9416	0220	02	18	3	4		X4	X	9	0008	
		WATER		WIND		BARO- METER		AIR TEMP. °C		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS											
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB	WET BULB	VIS CODE															
				17	518	030	089	083	0	09													
MESSNGR TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S %.	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> ?	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	3 CCT						
		STD	0000	0603	3218	2534	0026394	0000	14715	715													
137		OBS	0000	0603	32177	2534			14715	715	036	058	002	000	002								
		STD	0010	0584	3219	2538	0026074	0026	14709	720													
137		OBS	0010	0584	32192	2538			14709	720	039	055	009	000	002								
		STD	0020	0491	3298	2611	0019150	0049	14683	752													
137		OBS	0025	0434	33258	2639			14664	759	028	046	002	000	002								
		STD	0030	0328	3327	2650	0015400	0066	14620	743													
		STD	0050	0040	3335	2678	0012778	0094	14497	701													
137		OBS	0051	0031	33359	2679			14493	700	094	117	018	043	012								
		STD	0075	-0010	3354	2696	0011076	0124	14480	700													
137		OBS	0076	-0012	33544	2696			14480	700	104	117	022	078	012								
		STD	0100	0030	3372	2708	0009901	0150	14505	690													
137		OBS	0101	0032	33730	2709			14507	690	100	117	023	083	011								
		STD	0125	0083	3392	2721	0008684	0174	14536	680													
		STD	0150	0129	3408	2731	0007772	0194	14563	670													
137		OBS	T0152	0132	34090	2731			14565	669	113	126	013	112	014								
		STD	0200	0193	3426	2741	0006894	0231	14602	647													
137		OBS	T0202	0197	34271	2741			14605	646	117	132	013	120	014								
137		OBS	0213	0224	34331	2744			14619	640	124	143	014	128	016								

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	MARS SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER	
CTRY CODE	ID. NO.					INDICATOR		MO DAY HR.1/10			CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
						10°	1°	MO	DAY														HR.
31	549	EV	54485N	054103W	186	44	07	25	150	1965	LCE	9417	0247	02	17	2	4		X4	X	9		0009
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
		CDLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mbs)		DRY BULB	WET BULB														
				18	515	030		089	089			0	09										
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-3007	Σ Δ D DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	ND <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH						
		STD	0000	0417	3256	2585		0021541	0000	14643	746												
150		OBS	0000	0417	32561	2585				14643	746	049	077	005	000	004							
		STD	0010	0368	3257	2591		0021040	0021	14624	752												
150		OBS	0010	0368	32568	2591				14624	752	056	081	003	000	003							
		STD	0020	0265	3282	2620		0018272	0041	14585	760												
150		OBS	0025	0223	32935	2632				14569	764	077	123	008	018	004							
		STD	0030	0196	3306	2644		0015942	0058	14559	750												
		STD	0050	0118	3345	2681		0012465	0086	14533	709												
150		OBS	0051	0115	33470	2683				14532	708	066	082	015	046	007							
		STD	0075	0093	3372	2704		0010261	0115	14530	690												
150		OBS	0076	0092	33730	2705				14530	689	083	099	017	064	009							
		STD	0100	0063	3383	2715		0009250	0139	14522	679												
150		OBS	0102	0061	33837	2716				14521	678	090	100	019	092	010							
		STD	0125	0103	3397	2724		0008430	0161	14546	669												
		STD	0150	0164	3414	2733		0007565	0181	14580	657												
150		OBS	T0152	0170	34150	2734				14583	656	096	104	026	110	010							
		STD	0200	0342	3454	2750		0006085	0215	14671	624												
150		OBS	T0203	0346	34550	2750				14673	623	048	111	016	123	010							
150		OBS	0244	0332	34538	2751				14674	623	100	113	015	144	011							

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	MARS SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER			
CTRY CODE	ID. NO.					10°	1°	MO DAY HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT		
31	549	EV	54562N	053578W	186	43	07	25 173	1965	LCE	9418	0454	05	21	4	2		X4	X	9		0010	
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						CDLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mb)	DRY BULB	WET BULB											
								16	514	024		072	072	0	11								
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-3007	Σ Δ D DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	D <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S CC						
173		STD	0000	0465	3263	2586	0021464	0000	14664	743													
		OBS	0000	0465	32634	2586			14664	743	044	069	004	000	003								
173		STD	0010	0296	3307	2637	0016620	0019	14600	781													
		OBS	0010	0296	33071	2637			14600	781	047	072	008	007	004								
173		STD	0020	0295	3344	2667	0013828	0034	14606	737													
		OBS	0025	0288	33588	2679			14606	720	054	071	011	035	005								
173		STD	0030	0267	3366	2687	0011939	0047	14598	710													
		STD	0050	0182	3394	2716	0009179	0068	14569	679													
173		OBS	0051	0178	33950	2717			14567	678	078	089	022	081	008								
		STD	0075	0262	3420	2730	0007843	0090	14611	661													
173		OBS	0076	0265	34210	2731			14613	660	087	098	031	100	007								
		STD	0100	0307	3438	2741	0006889	0108	14637	644													
173		OBS	0102	0311	34388	2741			14639	643	092	101	038	117	008								
		STD	0125	0361	3453	2747	0006283	0124	14666	635													
173		STD	0150	0395	3464	2753	0005816	0140	14686	626													
		OBS	0152	0397	34643	2753			14688	625	099	108	005	121	009								
173		STD	0200	0396	3468	2756	0005597	0168	14696	621													
		OBS	T0203	0396	34679	2756			14696	621	103	109	003	145	010								
173		STD	0250	0423	3475	2758	0005381	0196	14716	618													
		STD	0300	0440	3480	2761	0005243	0222	14732	614													
173		OBS	0304	0441	34803	2761			14733	614	106	118	003	134	010								
		STD	0400	0440	3483	2763	0005124	0274	14749	615													
173		OBS	0404	0440	34834	2763			14750	615	105		002	132	010								
173		OBS	T0454	0436	34837	2764			14756	612	107	115	003	150	010								



REFERENCE		SHIP CODE	SNIP CODE	LATITUDE 1/10	LONGITUDE 1/10	MAGNETIC SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CRW CODE	ID. NO.						10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT
31	549	EV		5503 N	053463W	186 53	07	25	193	1965	LCE	9419	1083	11	14	2	2		X4	X	9		0011	
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS												
		COLOR CODE	TRANS. MM	DIR.	SPEED OR FORCE	METER (mba)	DRY BULB	WET BULB																
					15	519	014	078	078	0	13													
MESSNGR TIME HR 1/10	CST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> 10 <sup>3</sup>	Σ Δ D DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - σt/l	TOTAL-P μg - σt/l	NO <sub>3</sub> -N μg - σt/l	NO <sub>3</sub> -N μg - σt/l	SiO <sub>4</sub> -Si μg - σt/l	pH	S CCT							
		STD	0000	0511	3275	2590	0021079	0000	14685	735														
193		OBS	0000	0511	32749	2590			14685	735														
193		OBS	0009	0509	32753	2591			14685	742	043	063	005	000	003									
		STD	0010	0510	3287	2600	0020166	0021	14687	738														
		STD	0020	0516	3379	2672	0013345	0037	14704	707														
193		OBS	0024	0519	34053	2692			14709	697	042	060	009	024	005									
		STD	0030	0475	3413	2704	0010357	0049	14693	690														
193		OBS	0048	0389	34326	2728			14663	672	064	079	016	068	006									
		STD	0050	0387	3434	2730	0007900	0067	14662	671														
193		OBS	0072	0382	34533	2746			14667	657	084	093	005	097	007									
		STD	0075	0387	3456	2747	0006268	0085	14670	656														
193		OBS	0095	0414	34702	2756			14686	646	097	102	034	133	008									
		STD	0100	0416	3471	2756	0005457	0100	14688	643														
		STD	0125	0424	3476	2759	0005190	0113	14696	630														
		STD	0150	0430	3480	2762	0004979	0126	14703	620														
193		OBS	T0189	0435	34843	2765			14712	610	107	115	004	152	010									
		STD	0200	0434	3484	2765	0004752	0150	14714	610														
		STD	0250	0430	3484	2765	0004768	0174	14720	610														
193		OBS	0277	0428	34842	2765			14724	610	101	113	002	153	010									
		STD	0300	0426	3484	2765	0004791	0198	14727	612														
193		OBS	T0367	0420	34836	2766			14735	616	105	116	003	130	010									
		STD	0400	0416	3484	2766	0004797	0246	14739	616														
		STD	0500	0407	3485	2768	0004743	0294	14752	616														
193		OBS	0552	0404	34849	2768			14759	616	113	124	004	156	011									
		STD	0600	0403	3485	2769	0004756	0341	14767	617														
		STD	0700	0400	3485	2769	0004817	0389	14782	618														
193		OBS	T0742	0398	34857	2770			14789	618	106	118	005	132	012									
		STD	0800	0396	3487	2771	0004715	0437	14798	619														
		STD	0900	0391	3488	2772	0004674	0483	14812	622														
197		OBS	T0914	0390	34883	2773			14814	622	110	123	004	127	011									
		STD	1000	0383	3489	2774	0004594	0530	14826	623														
197		OBS	1076	0374	34896	2775			14835	623	110	119	003	160	011									

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INCHES	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER		SEA	TYPE		AMT
31	549	EV	55106N	053352W		186	53	07	26	001	1965	LCE 9420	2121	15	14	2	2		X4	X 9		0012	
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTH	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mbs)	DRY BULB	WET BULB											
									15	S17	017	078	072	0	12								
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> ?	Σ Δ O DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>2</sub> -N μg - dl/l	NO <sub>3</sub> -N μg - dl/l	SiO <sub>4</sub> -Si μg - dl/l	pH	COND.						
		STO	0000	0648	3345	2629	0017377	0000	14750	696													
	001	OBS	0000	0648	33454	2629			14750	696	032	059	005	004	003								
		STO	0010	0658	3403	2673	0013213	0015	14763	680													
		STO	0020	0585	3437	2710	0009790	0027	14740	673													
	001	OBS	0024	0559	34479	2721			14731	670	057	071	012	040	006								
		STO	0030	0534	3450	2726	0008235	0036	14722	665													
		STO	0050	0464	3458	2741	0006885	0051	14698	652													
	001	OBS	0074	0406	34655	2753			14679	640	091	104	041	096	008								
		STO	0075	0406	3466	2753	0005707	0067	14679	640													
		STO	0100	0409	3472	2758	0005312	0080	14685	638													
		STO	0125	0412	3477	2761	0004992	0093	14691	636													
	001	OBS	0149	0415	34811	2764			14697	635	100	113	002	135	009								
		STO	0150	0415	3481	2764	0004739	0105	14697	635													
		STO	0200	0411	3482	2765	0004695	0129	14704	636													
		STO	0250	0408	3483	2766	0004652	0152	14711	636													
	001	OBS	0299	0406	34833	2767			14718	637	103	111	001	156	009								
		STO	0300	0406	3483	2767	0004650	0176	14718	637													
		STO	0400	0403	3483	2767	0004716	0223	14734	625													
	001	OBS	T0402	0403	34829	2767			14734	625	107	114	004	158	010								
		STO	0500	0394	3483	2768	0004726	0270	14746	625													
	001	OBS	0599	0385	34826	2769			14759	624	109	120	003	130	010								
		STO	0600	0385	3483	2769	0004704	0317	14759	624													
		STO	0700	0374	3486	2772	0004447	0363	14771	630													
		STO	0800	0366	3488	2775	0004281	0406	14785	636													
	001	OBS	T0800	0366	34882	2775			14785	636	108	116	002	159	010								
		STO	0900	0362	3488	2775	0004320	0449	14800	639													
		STO	1000	0359	3488	2776	0004362	0493	14815	642													
	001	OBS	1025	0358	34883	2776			14819	643	104	113	003	088	010								
		STO	1100	0356	3488	2776	0004406	0537	14831	638													
		STO	1200	0354	3489	2776	0004454	0581	14847	632													
	001	OBS	T1209	0354	34885	2776			14848	631	105	120	002	153	011								
		STO	1300	0353	3488	2776	0004528	0626	14863	631													
		STO	1400	0353	3488	2776	0004615	0671	14880	631													
		STO	1500	0353	3488	2776	0004709	0718	14897	631													
	001	OBS	T1518	0353	34881	2776			14900	631	103	118	002	142	011								

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INCHES	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT		
31	549	EV	5750 N	06140 W		187	71	07	27	123	1965	LCE 9421	0085	01	05	0	X		X1	3	6		0013	
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTH	SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB												
									06	S08	105	100	083	8	05									
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$ ?		$\Sigma \Delta$ O DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{dl/l}$	TOTAL-P $\mu\text{g} - \text{dl/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{dl/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{dl/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{dl/l}$	pH	COND.						
123		STD	0000	0523	3051	2412	0038020		0000	14660														
		OBS	0000	0523	30512	2412				14660														
		STD	0010	0257	3147	2513	0028434		0033	14561														
123		OBS	0015	0161	31812	2547				14524														
		STD	0020	0132	3188	2554	0024488		0060	14513														
		STD	0030	0083	3201	2568	0023220		0084	14494														
123		OBS	0040	0043	32117	2578				14479														
		STD	0050	0013	3220	2587	0021418		0128	14468														
123		OBS	0065	-0012	32275	2594				14460														
		STD	0075	-0013	3228	2594	0020650		0181	14461														
123		OBS	0080	-0014	32288	2595				14462														

REFERENCE CTRY CODE	ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDIC.	MARS DEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
							10"	1"	MO DAY HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER					SEA	
31	549	EV	58438N	062472W		187	82	07 28	208	1965	LCE	9422	0090	01	07	2	2		X4	X	9		0014
						WATER		WIND		AIR TEMP. °C													
						COLOR CODE	TRANS. MM	DIR.	SPEED OR FORCE	BARO- METER (mbs)	DRY BULB	WET BULB	VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
									33	517	125	094	078	0	05								
MESSAGE TIME OF HR 1/10		CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-210?		Σ Δ D DYN. M. x 10 <sup>3</sup>		SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P µg - dl/l	TOTAL-P µg - dl/l	NO <sub>2</sub> -N µg - dl/l	NO <sub>3</sub> -N µg - dl/l	SiO <sub>4</sub> -Si µg - dl/l	pH	S C		
			STD	0000	0327	3145	2506		0029121		0000		14590	770									
208			OBS	0000	0327	31451	2506						14590	770	066	082	008	023	006				
			STD	0010	0244	3168	2531		0026747		0028		14558	779									
			STD	0020	0176	3186	2550		0024913		0054		14532	788									
208			OBS	0025	0148	31931	2557						14522	792	076	101	010	033	007				
			STD	0030	0126	3198	2563		0023690		0078		14513	780									
			STD	0050	0062	3214	2579		0022152		0124		14490	749									
208			OBS	0050	0062	32135	2579						14490	749	085	112	009	039	007				
			STD	0075	0032	3226	2591		0021025		0178		14482	749									
208			OBS	0075	0032	32262	2591						14482	749	087	107	011	045	008				
208			OBS	0080	0027	32274	2592						14481	742	087	105	010	045	007				

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDIC.	MARS DEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT PER	SEA		TYPE	AMT			
31	549	EV	58463N	062343W		187	82	07	28	221	1965	LCE	9423	0146	01	06	3	2		X1	3	7	0015	
						WATER		WIND		BARO- METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB												
									34	503	129	050	044	6	06									
MESSAGE TIME OF HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-210?		$\Sigma \Delta D$ DYN. M. X 10 <sup>3</sup>		SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P µg - dl/l	TOTAL-P µg - dl/l	NO <sub>2</sub> -N µg - dl/l	NO <sub>3</sub> -N µg - dl/l	SiO <sub>4</sub> -Si µg - dl/l	pH						
		STD	0000	0460	3172	2514	0028315		0000		14650	760												
221		OBS	0000	0460	31717	2514					14650	760	045	073	002	002	001							
		STD	0010	0303	3186	2540	0025835		0027		14586	798												
		STD	0020	0178	3200	2561	0023863		0052		14535	816												
221		OBS	0024	0136	32053	2568					14518	818	054		003	003	002							
		STD	0030	0091	3214	2578	0022273		0075		14500	799												
221		OBS	0049	-0011	32367	2601					14459	758	087	113	008	030	005							
		STD	0050	-0012	3238	2602	0019933		0117		14459	758												
221		OBS	0072	-0048	32559	2618					14449	751	089	098	007	041	006							
		STD	0075	-0056	3258	2620	0018216		0165		14446	743												
221		OBS	0097	-0095	32741	2634					14434	702	104	129	008	074	009							
		STD	0100	-0093	3276	2636	0016691		0209		14435	701												
		STD	0125	-0078	3287	2644	0015889		0249		14448	692												
221		OBS	0135	-0072	32890	2646					14453	689	108	124	010	080	011							

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INDIC.	MARS DEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.						10"	1"	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT
31	549	EV	58537N	062086W		187	82	07	28	239	1965	LCE	9424	0192	02	09	0	2		X1	3	6	0016	
						WATER		WIND		BARO- METER (mbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB												
									02	502	125	067	061	8	07									
MESSAGE TIME HR 1/10	CAST OF NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-210?		$\Sigma \Delta D$ DYN. M. x 10 <sup>3</sup>		SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P µg - dl/l	TOTAL-P µg - dl/l	NO <sub>2</sub> -N µg - dl/l	NO <sub>3</sub> -N µg - dl/l	SiO <sub>4</sub> -Si µg - dl/l	pH						
239		STD	0000	0486	3169	2509	0028764		0000		14660	768												
		OBS	0000	0486	31692	2509					14660	768	047	077	003	000	003							
		STD	0010	0322	3198	2548	0025083		0027		14596	812												
239		STD	0020	0193	3223	2578	0022216		0051		14545	832												
		OBS	0025	0142	32353	2592					14525	834	102	074	005	007	003							
		STD	0030	0112	3248	2604	0019803		0072		14514	815												
239		STD	0050	0022	3284	2638	0016568		0108		14481	756												
		OBS	0050	0022	32841	2638					14481	756	072	095	011	038	006							
		STD	0075	-0025	3296	2649	0015452		0148		14465	719												
239		OBS	0075	-0025	32958	2649					14465	719	090	106	012	062	009							
		STD	0100	0006	3318	2666	0013900		0185		14487	712												
		OBS	0100	0006	33179	2666					14487	712	094	112	012	079	010							
239		STD	0125	0044	3337	2679	0012675		0218		14511	712												
		OBS	0125	0044	33365	2679					14511	712	081	110	012	069	009							
		STD	0150	0067	3351	2689	0011702		0248		14528	697												
239		OBS	0190	0074	33641	2699					14539	643	MUD											

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	ORBIT INCHES	MARS DEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT PER	SEA		TYPE	AMT	
31	549	EV	59013N	061428W	187	91	07	29	020	1965	LCE	9425	0155	01	06	0	2		X4	X	9	0017
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS						
						COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	(mbs)	DRY BULB	WET BULB										
								10		503		132		067		061		1		08		
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY- $\sigma_t$		$\Sigma \Delta$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH				
		STD	0000	0437	3183	2526		0027210		0000	14642	777										
020		OBS	0000	0437	31834	2526					14642	777	048	074	003	000	002					
		STD	0010	0353	3186	2536		0026260		0027	14608	779										
020		OBS	0010	0353	31859	2536					14608	779	061	094	005	000	002					
		STD	0020	0140	3213	2574		0022634		0051	14520	795										
020		OBS	0025	0063	32265	2589					14488	796	070	090	006	024	003					
		STD	0030	0038	3242	2603		0019863		0072	14479	779										
020		OBS	0049	-0029	32830	2639					14458	732	092	112	010	067	008					
		STD	0050	-0032	3284	2640		0016334		0109	14456	731										
020		OBS	0074	-0052	32990	2653					14453	712	101	124	014	068	011					
		STD	0075	-0049	3300	2654		0015031		0148	14455	714										
020		OBS	0098	0012	33202	2667					14490	724	085	098	012	023	009					
		STD	0100	0018	3322	2668		0013647		0184	14493	722										
020		OBS	0108	0036	33273	2672					14503	713	086	096	012	072	010					
		STD	0125	0035	3338	2680		0012512		0216	14507	698										
020		OBS	0143	0034	33485	2689					14511	687	101	111	014	084	012					

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	ORBIT INCHES	MARS DEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
						10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT PER	SEA		TYPE	AMT		
31	549	EV	59079N	061177W	187	91	07	29	042	1965	LCE	9426		0177	02	03	1	2		X4	X	9	0018
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	(mbs)	DRY BULB	WET BULB											
								00	S00	139	044	039	2	06									
MESSAGE# TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY- $\sigma_t$		$\Sigma \Delta$ D DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH					
042		STD	0000	0386	3151	2505		0029158		0000	14616	786											
		OBS	0000	0386	31513	2505					14616	786	052	082	003	002	002						
		STD	0010	0198	3177	2541		0025742		0027	14539	781											
042		STD	0020	0065	3199	2567		0023281		0052	14484	774											
		OBS	0025	0019	32086	2577					14465	771	079	101	008	032	004						
		STD	0030	0011	3215	2583		0021799		0075	14463	767											
042		STD	0050	-0008	3239	2603		0019866		0116	14461	751											
		OBS	0050	-0008	32391	2603					14461	751	087	105	009	053	008						
		STD	0075	-0005	3269	2627		0017563		0163	14471	737											
042		OBS	0075	-0005	32693	2627					14471	737	088	101	010	063	008						
		STD	0100	-0008	3286	2640		0016297		0205	14476	730											
		OBS	0100	-0008	32856	2640					14476	730	090	104	010	065	008						
042		STD	0125	0007	3310	2659		0014500		0244	14490	715											
		STD	0150	0041	3341	2682		0012313		0277	14514	693											
		OBS	0160	0059	33562	2694					14526	682	097	110	017	081	011						

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	ORBIT INCHES	MARS DEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER			
						10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT PER	SEA		TYPE	AMT				
31	549	EV	59154N	060498W		187	90	07	29	068	1965	LCE	9427		0210	02	00	0	X		X4	X	9		0019
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	(mbs)	DRY BULB	WET BULB													
									00	S00	142	044	039										0	06	
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S %	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> °		Σ Δ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH								
068		STD	0000	0246	3194	2552	0024758		0000	14561	838														
		OBS	0000	0246	31944	2552				14561	838	054	087	004	003	003									
		STD	0010	0160	3204	2565	0023443		0024	14526	838														
068		STD	0020	0108	3218	2580	0022065		0047	14506	831														
		OBS	0025	0094	32267	2588				14502	825	061	085	007	018	005									
		STD	0030	0100	3238	2596	0020495		0068	14507	814														
068		OBS	0040	0104	32584	2613				14513	795	062	081	006	028	004									
		STD	0050	0077	3273	2626	0017699		0106	14505	786														
		STD	0075	0036	3302	2652	0015237		0147	14494	762														
068		OBS	0075	0036	33024	2652				14494	762	071	079	009	045	005									
		STD	0100	0044	3317	2663	0014162		0184	14504	738														
		STD	0125	0065	3336	2677				14520	714														
068		OBS	0125	0065	33364	2677				14520	714	081	094	013	072	008									
		STD	0150	0100	3361	2695	0011144		0248	14544	691														
	068	OBS	0185	0172	34044	2725				14588	661	098	110	022	112	010									



REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DATE MO DAY HR, 1/10	MARS DEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
TRY ODI	ID. NO.					10"	1"	MO	DAY		HR, 1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE	
31	549	EV	59222N	060256W	187	90	07	29	088	1965	LCE	9428	0256	03	00	0	X		X4	X	9	0020
					WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
					COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mba)	DRY BULB	WET BULB											
							06	505	132	039	039	1	07									
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> ?	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>2</sub> -N μg - dl/l	NO <sub>3</sub> -N μg - dl/l	SiO <sub>4</sub> -Si μg - dl/l	pH	CHLOROPHYLL					
		STD	0000	0267	3173	2533	0026574	0000	14567	822												
	088	OBS	0000	0267	31725	2533			14567	822	062	101	004	008	004							
		STD	0010	0133	3182	2550	0024937	0026	14511	835												
	088	OBS	0010	0133	31822	2550			14511	835	052	089	004	007	003							
		STD	0020	0057	3215	2580	0022020	0049	14483	832												
	088	OBS	0024	0036	32276	2592			14476	831	087	107	009	032	006							
		STD	0030	0033	3246	2606	0019534	0070	14478	804												
	088	OBS	0049	0028	32941	2645			14485	737	080	096	016	058	007							
		STD	0050	0028	3295	2646	0015766	0105	14486	736												
		STD	0075	0031	3318	2665	0014021	0143	14494	710												
	088	OBS	0097	0033	33385	2681			14502	695	091	108	012	074								
		STD	0100	0040	3342	2683	0012238	0175	14506	695												
		STD	0125	0095	3366	2699	0010732	0204	14538	690												
	088	OBS	0145	0133	33824	2710			14561	685	087	099	018	092	008							
		STD	0150	0142	3386	2712	0009528	0229	14566	684												
		STD	0200	0213	3416	2731	0007807	0273	14610	666												
		STD	0250	0255	3430	2739	0007127	0310	14638	642												
	088	OBS	0256	0258	34309	2739			14641	639	097	104	026	124	009							

REFERENCE		SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	MARS DEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER				
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR, 1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT PER		SEA	TYPE		AMT			
31	549	EV	59292N	060005W	187	90	07	29	121	1965	LCE	9429	1646	12	13	0	Z		X4	4	8	0021			
					WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
					COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB														
										16	504					146	067	061	1	14					
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> ?	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>2</sub> -N μg - dl/l	NO <sub>3</sub> -N μg - dl/l	SiO <sub>4</sub> -Si μg - dl/l	pH	CHLOROPHYLL								
121		STD	0000	0444	3324	2636	0016694	0000	14663	746															
		OBS	0000	0444	33240	2636			14663	746	034	056	007	008	003										
		STD	0010	0386	3331	2648	0015612	0016	14642	752															
		STD	0020	0342	3337	2657	0014763	0031	14625	758															
121		OBS	0024	0328	33392	2660			14620	760	050	071	007	020	003										
		STD	0030	0316	3341	2663	0014239	0046	14616	755															
121		OBS	0032	0307	33426	2665			14613	753	034	052	008	067	003										
121		OBS	0046	0171	33761	2702			14560	732	064	082	019	057	004										
		STD	0050	0174	3380	2705	0010182	0070	14563	725															
121		OBS	0069	0204	33993	2718			14582	696	080	091	022	097	005										
		STD	0075	0223	3406	2722	0008587	0094	14592	687															
121		OBS	0092	0279	34233	2731			14622	668	093	104	031	108	007										
		STD	0100	0314	3432	2735	0007404	0114	14639	670															
		STD	0125	0400	3455	2745	0006519	0131	14683	675															
121		OBS	0136	0426	34616	2748			14697	677	099	105	005	134	008										
		STD	0150	0438	3465	2749	0006188	0147	14705	661															
121		OBS	T0178	0458	34720	2752			14718	637	086	098	002	148	008										
		STD	0200	0463	3475	2754	0005764	0177	14724	636															
		STD	0250	0472	3482	2759	0005397	0205	14737	635															
121		OBS	0273	0474	34841	2760			14742	634	103	109	004	152	008										
		STD	0300	0474	3486	2762	0005180	0231	14747	634															
121		OBS	T0366	0475	34892	2764			14759	633	106	114	002	133	009										
		STD	0400	0463	3488	2764	0005013	0282	14759	634															
		STD	0500	0434	3487	2767	0004861	0332	14764	635															
121		OBS	0565	0421	34869	2768			14769	636	105	117	001	142	009										
		STD	0600	0419	3488	2769	0004716	0379	14774	632															
		STD	0700	0414	3489	2771	0004682	0426	14789	624															
121		OBS	T0770	0409	34900	2772			14798	619	113	118	001	154	012										
		STD	0800	0405	3490	2772	0004598	0473	14802	617															
		STD	0900	0395	3490	2773	0004573	0519	14814	614															
121		OBS	0987	0388	34899	2774			14826	613	114	131	003	162	013										
		STD	1000	0387	3490	2774	0004568	0564	14828	613															
		STD	1100	0382	3490	2775	0004597	0610	14842	617															
121		OBS	T1165	0381	34906	2775			14853	619	112	125	003	153	013										

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH METER	MARS DEN SQUARE	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S' MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER					
CRUISE CODE	ID. NO.						CRUISE NO.	STATION NUMBER		MO	DAY			HR./10	DIR.	HGT		PER	SEA		TYPE	AMT			
31	549	EV	59362N	059343W	186	99	07 29 158	1965	LCE	9430	2140	11	09	0	2		X4	X9	0022						
						WATER		WIND		AIR TEMP. °C				SPECIAL OBSERVATIONS											
						COLOR CODE	TRANS. M	DIR.	SPEED OR FORCE	BARO- METER (mb)	DRY BULB	WET BULB	VIS. CODE	NO. OBS. DEPTHS											
								17	503	159	083	072	1	12											

MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-10 <sup>3</sup>	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>2</sub> -N μg - dl/l	NO <sub>3</sub> -N μg - dl/l	SiO <sub>4</sub> -Si μg - dl/l	pH	S CC
		STD	0000	0688	3350	2628	0017537	0000	14766	682							
158		OBS	0000	0688	33500	2628			14766	682							
		STD	0010	0669	3370	2646	0015816	0017	14763	735							
		STD	0020	0643	3387	2663	0014234	0032	14756	758							
158		OBS	0023	0634	33923	2668			14754	759	053	079	007	010	004		
		STD	0030	0612	3400	2677	0012895	0045	14747	730							
158		OBS	0045	0551	34216	2702			14728	683	044	058	011	035	004		
		STD	0050	0516	3434	2716	0009253	0067	14716	675							
158		OBS	0067	0431	34669	2751			14688	652	089	107	046	099	007		
		STD	0075	0433	3470	2753	0005683	0086	14691	648							
		STD	0100	0442	3479	2760	0005129	0100	14700	640							
158		OBS	0110	0446	34817	2761			14704	638	099	117	010	138	009		
		STD	0125	0460	3485	2762	0004900	0112	14712	640							
		STD	0150	0476	3489	2764	0004805	0124	14724	642							
158		OBS	T0179	0486	34916	2765			14733	643		113	004	154	010		
		STD	0200	0477	3490	2764	0004798	0148	14732	642							
		STD	0250	0461	3489	2765	0004750	0172	14734	640							
158		OBS	0263	0458	34884	2765			14735	639	090	100	001	097	007		
		STD	0300	0453	3489	2766	0004745	0196	14739	638							
158		OBS	T0350	0446	34888	2767			14744	637	105	110	001	145	009		
		STD	0400	0437	3489	2768	0004643	0243	14749	634							
		STD	0500	0421	3490	2771	0004490	0288	14759	629							
158		OBS	0526	0417	34902	2771			14761	628	102	128	002	140	009		
		STD	0600	0408	3491	2773	0004367	0333	14770	627							
158		OBS	0695	0397	34922	2775			14781	626	106	115	002	155	011		
		STD	0700	0396	3492	2775	0004251	0376	14782	626							
		STD	0800	0386	3492	2776	0004228	0418	14794	627							
158		OBS	T0899	0377	34917	2777			14807	628	110	124	002	151	011		
		STD	0900	0377	3492	2777	0004235	0461	14807	628							
		STD	1000	0369	3491	2777	0004258	0503	14820	631							
158		OBS	T1082	0363	34909	2777			14831	634	107	118	002	149	010		

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH METER	MARS DEN SQUARE	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CRUISE CODE	ID. NO.						CRUISE NO.	STATION NUMBER		MD	DAY HR./10			DIR.	HGT	PER	SEA		TYPE	AMT	
31	549	EV	59434N	05909 W	186	99	07 29 186	1965	LCE	9431	2560	12	12	1	4		X4	X9	0023		
						WATER		WIND		AIR TEMP. °C				SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. M	DIR.	SPEED OR FORCE	BARO- METER (mb)	DRY BULB	WET BULB	VIS. CODE	NO. OBS. DEPTHS							
								22	502	173	114	100	1	13							

MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-10 <sup>3</sup>	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>2</sub> -N μg - dl/l	NO <sub>3</sub> -N μg - dl/l	SiO <sub>4</sub> -Si μg - dl/l	pH	S CC
186		STD	0000	0808	3400	2649	0015467	0000	14819	682							
		OBS	0000	0808	33995	2649			14819	682	019	043	002	004	004		
		STD	0010	0807	3406	2655	0014987	0015	14821	680							
		STD	0020	0774	3414	2666	0013946	0030	14811	678							
186		OBS	0025	0746	34184	2673			14802	677	026	048	005	013	004		
		STD	0030	0675	3424	2688	0011892	0043	14776	677							
		STD	0050	0479	3445	2729	0008021	0063	14702	675							
186		OBS	0051	0473	34455	2730			14700	675	063	074	023	064	004		
		STD	0075	0439	3468	2751	0005900	0080	14693	651							
186		OBS	0076	0438	34690	2752			14693	650	095	115	049	112	008		
		STD	0100	0461	3480	2758	0005258	0094	14708	641							
186		OBS	0102	0463	34811	2759			14709	640	100	126	020	120	010		
		STD	0125	0482	3485	2760	0005134	0107	14721	640							
		STD	0150	0494	3490	2762	0004969	0119	14731	640							
186		OBS	0152	0495	34899	2762			14732	640	112	128	009	172	011		
		STD	0200	0491	3491	2763	0004892	0144	14738	640							
186		OBS	T0203	0491	34910	2764			14739	640	096	106	007	105	008		
		STD	0250	0480	3491	2765	0004815	0168	14742	640							
		STD	0300	0469	3491	2766	0004747	0192	14746	639							
186		OBS	0305	0468	34905	2766			14746	639				007	130	009	
		STD	0400	0449	3490	2768	0004704	0240	14754	635							
186		OBS	T0406	0448	34897	2767			14754	635	108	129	004	149	010		
		STD	0500	0432	3490	2769	0004615	0286	14763	630							
		STD	0600	0416	3491	2772	0004458	0332	14773	625							
186		OBS	0609	0415	34911	2772			14774	624	096	103	003	147	009		
		STD	0700	0402	3492	2774	0004357	0376	14784	625							
		STD	0800	0389	3492	2775	0004270	0419	14795	626							
186		OBS	T0812	0388	34920	2776			14797	626	119	126	005	144	012		
		STD	0900	0377	3492	2777	0004213	0461	14807	629							
		STD	1000	0367	3492	2778	0004182	0503	14819	632							
186		OBS	T1036	0364	34916	2778			14824	633	115	132	002	155	011		
		STD	1100	0359	3492	2779	0004172	0545	14833	635							
		STD	1200	0353	3492	2779	0004182	0587	14847	637							
186		OBS	1218	0352	34922	2779			14850	637	109	115	003	140	011		

REFERENCE		SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DATE 1/10	MARSOEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER
CITY CODE	IO. NO.					10"	1"	MO	DAY	HR, 1/10		CRUISE NO.	STATION NUMBER			OBSERVATIONS					TYPE	AMT	
																WATER	WIND	BARO- METER	AIR TEMP. °C				
31	549	EV	59505N	058443W		186	98	07	29	207	1965	LCE	9432	2743	12	12	1	3		X4	X 9		0024

REFERENCE		SHIP CODE	LATITUDE ° 1/10'	LONGITUDE ° 1/10'	DEPTH INDIC	MARSDEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT
31	549					EV	60258N	058477W	222	08		07	30			012	1965	LCE		9433	2614		13
						WATER		WIND		BARO- METER (mba)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. IMI	DIR.	SPEED OR FORCE		DRY BULB	WET BULB					1	12					
								12	503	159	067	067	1	12									
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> ?		Σ Δ D DYN. M. x 10 <sup>3</sup>		SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	Si O <sub>4</sub> -Si μg - ml/l	pH					
		STD	0000	0838	3407	2651	0015347		0000		14832	424											
012		OBS	0000	0838	34069	2651					14832	424	023	058	006	003	003						
012		OBS	0005	0771	34070	2661					14807	675		060	007	002	005						
		STD	0010	0765	3408	2663	0014238		0015		14805	676											
		STD	0020	0752	3410	2666	0013907		0029		14802	678											
012		OBS	0026	0744	34117	2668					14800	679	029	045	003	006	003						
		STD	0030	0694	3416	2679	0012735		0042		14782	680											
		STD	0050	0502	3435	2718	0009022		0064		14711	686											
012		OBS	0052	0488	34369	2721					14705	686	043	096	003	000	003						
		STD	0075	0469	3458	2740	0006965		0084		14704	661											
		STD	0100	0455	3476	2756	0005493		0100		14705	641											
012		OBS	0104	0453	34781	2758					14705	638	104	119	057	120	009						
		STD	0125	0461	3481	2759	0005210		0113		14712	638											
		STD	0150	0469	3484	2761	0005101		0126		14720	637											
		STD	0200	0480	3489	2763	0004907		0151		14733	636											
012		OBS	0211	0481	34894	2763					14736	636	102	127	005	150	010						
		STD	0250	0481	3490	2764	0004879		0175		14742	635											
		STD	0300	0479	3491	2765	0004831		0200		14750	634											
012		OBS	T0316	0477	34918	2766					14752	633	102	137	003	158	011						
		STD	0400	0460	3491	2767	0004725		0247		14758	628											
012		OBS	0421	0456	34913	2768					14760	627	108	119	001	158	011						
		STD	0500	0437	3491	2770	0004598		0294		14765	627											
		STD	0600	0416	3491	2772	0004495		0339		14773	627											
012		OBS	0627	0411	34904	2772					14776	627	082	094	002	153	010						
		STD	0700	0403	3491	2773	0004406		0384		14784	628											
		STD	0800	0392	3491	2774	0004372		0428		14796	629											
		STD	0900	0381	3491	2776	0004334		0471		14808	630											
012		OBS	0950	0376	34914	2776					14815	631	116	124	007	162	012						
		STD	1000	0369	3491	2777	0004280		0514		14820	632											
		STD	1100	0359	3491	2778	0004245		0557		14833	633											
012		OBS	T1154	0356	34908	2778					14840	633	103	119	002	159	011						
		STD	1200	0356	3491	2778	0004285		0600		14848	633											
		STD	1300	0356	3492	2779	0004322		0643		14865	632											
112		OBS	T1336	0356	34919	2779					14871	631	101	108	001	168	011						

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT		PER	SEA		TYPE
31	549	EV	60272N	059308W	222	09	07	30	053	1965	LCE	9434	2450	12	00	0	X		X4	X	9	0026
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS						
						COLOR CODE	TRANS. IMI	DIR.	SPEED OR FORCE	DRY BULB	WET BULB	DRY BULB	WET BULB									
									18	502	146	056	056	1	11							
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$		$\Sigma \Delta D$ DYN. M. $\times 10^3$		SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ml/l}$	TOTAL-P $\mu\text{g} - \text{ml/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ml/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ml/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{ml/l}$	pH				
		STD	0000	0746	3395	2655	0014952		0000		14795	673										
053		OBS	0000	0746	33949	2655					14795	673	021	043	009	002	002					
		STD	0010	0710	3394	2660	0014524		0015		14782	690										
053		OBS	0011	0706	33943	2660					14781	691	021	038	013	003	002					
		STD	0020	0675	3396	2666	0013943		0029		14770	689										
		STD	0030	0609	3399	2676	0012963		0042		14746	686										
053		OBS	0035	0563	33997	2683					14728	685	033	046	010	022	003					
		STD	0050	0375	3438	2734	0007452		0063		14658	664										
053		OBS	0050	0375	34384	2734					14658	664	077	093	039	095	005					
		STD	0075	0405	3454	2744	0006598		0080		14677	650										
		STD	0100	0430	3467	2751	0005903		0096		14693	639										
		STD	0125	0450	3478	2758	0005316		0110		14707	630										
053		OBS	0129	0453	34800	2759					14709	629	102	112	001	146	008					
		STD	0150	0452	3481	2760	0005157		0123		14713	630										
		STD	0200	0450	3483	2762	0005047		0149		14720	632										
		STD	0250	0448	3485	2763	0004938		0174		14728	634										
		STD	0300	0446	3487	2765	0004829		0198		14736	637										
053		OBS	0309	0446	34868	2765					14737	637	103	118	002	146	009					
		STD	0400	0424	3486	2767	0004721		0246		14743	639										
053		OBS	T0413	0421	34859	2767					14744	639	104	116	001	154	009					
		STD	0500	0411	3486	2768	0004676		0293		14754	638										
		STD	0600	0403	3487	2770	0004608		0339		14767	637										
053		OBS	0619	0402	34874	2771					14770	637	104	111	000	146	009					
		STD	0700	0402	3489	2772	0004543		0385		14784	636										
		STD	0800	0398	3491	2774	0004442		0430		14799	634										
053		OBS	T0824	0397	34911	2774					14803	633	109	116	000	165	010					
		STD	0900	0387	3491	2775	0004390		0474		14811	631										
		STD	1000	0376	3491	2776	0004341		0518		14823	628										
053		OBS	1054	0371	34914	2777					14830	626	110	118	001	145	011					
		STD	1100	0368	3491	2777	0004331		0561		14836	627										
		STD	1200	0362	3491	2778	0004350		0604		14851	632										
053		OBS	T1242	0361	34911	2778					14857	635	109	119	005	163	010					



REFERENCE		SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DIFF INDIC	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
CTRY CODE	IO. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT			
31	549	EV	60276N	060055W		223	00	07	30	082	1965	LCE	9435	2103	10	22	3	2		X2	7	18	0027		
						WATER		WIND		BARO- METER (mbars)		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB													
								22		505	146	061	061	7	10										
MESSAGE TIME HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY- $\sigma_t$		$\Sigma \Delta \sigma$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	Si O <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH	S C						
082		STD	0000	0714	3381	2648		0015583		0000	14780	680													
		OBS	0000	0714	33807	2648					14780	680													
082		STD	0010	0561	3390	2675		0013013		0014	14722	686	019	040	000	001	002								
		STD	0020	0448	3400	2696		0011040		0026	14679	692													
082		OBS	0027	0392	34074	2708					14657	696	056	070	058	047	004								
		STD	0030	0389	3411	2711		0009632		0037	14657	693													
082		STD	0050	0378	3434	2731		0007812		0054	14659	673													
		OBS	0058	0376	34415	2737					14660	666	079	088	039	099	006								
082		STD	0075	0397	3452	2743		0006668		0072	14673	655													
		STD	0100	0422	3466	2751		0005894		0088	14690	642													
082		STD	0125	0440	3477	2758		0005284		0102	14703	631													
		OBS	0144	0450	34827	2762					14711	625	105	116	001	145	008								
082		STD	0150	0450	3483	2762		0004969		0115	14712	625													
		STD	0200	0447	3485	2764		0004840		0139	14719	622													
082		OBS	0239	0441	34865	2766					14723	618	108	118	042	149	010								
		STD	0250	0436	3486	2766		0004699		0163	14723	615													
082		STD	0306	0416	3485	2767		0004608		0186	14723	604													
		OBS	T0375	0393	34840	2769					14725	593	112	127	003	156	013								
082		STD	0400	0390	3484	2769		0004507		0232	14728	593													
		STD	0500	0380	3484	2770		0004521		0277	14741	592													
082		OBS	T0564	0376	34833	2770					14749	591	112	121	002	162	013								
		STD	0600	0376	3483	2770		0004574		0323	14755	591													
082		STD	0700	0376	3484	2770		0004641		0369	14772	593													
		OBS	0731	0375	34838	2770					14777	593	106	118	000	158	014								
082		STD	0800	0373	3484	2771		0004659		0415	14787	591													
		OBS	T0896	0369	34845	2772					14802	588	115	123	002	165	014								
082		STD	0900	0370	3485	2772		0004644		0462	14803	588													
		OBS	T0992	0382	34874	2773					14824	598	114	120	000	165	014								

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DIFF INDIC	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	IO. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT
31	549	EV	60279N	060464W		223	00	07	30	124	1965	LCE	9436	1353	13	16	2	2		X1	4	6	0028
						WATER		WIND		BARO- METER (mbars)		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB											
									16	508	146	061	056	8	13								
MESSAGE TIME HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME AND MALT-X10 <sup>3</sup>		Σ Δ σ DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S	C				
		STD	0000	0564	3329	2627	0017591		0000	14714	694												
124		OBS	0000	0564	33292	2627				14714	694	018	037	002	001	001							
		STD	0010	0443	3344	2652	0015189		0016	14667	714												
		STD	0020	0347	3357	2672	0013299		0031	14630	726												
124		OBS	0027	0295	33643	2683				14610	729	041	060	007	031	002							
		STD	0030	0282	3367	2686	0011987		0043	14605	726												
		STD	0050	0213	3382	2704	0010315		0066	14580	706												
124		OBS	0053	0206	33835	2706				14578	703	066	079	015	067	004							
		STD	0075	0178	3394	2716	0009159		0090	14571	684												
124		OBS	0080	0172	33976	2720				14569	678	074	087	020	085	005							
		STD	0100	0252	3420	2731	0007774		0111	14611	647												
124		OBS	0106	0274	34262	2734				14622	640	091	107	019	124	007							
		STD	0125	0344	3444	2742	0006797		0129	14658	633												
		STD	0150	0411	3462	2749	0006130		0145	14693	626												
124		OBS	0160	0430	34668	2751				14703	624	096	107	014	144	008							
		STD	0200	0450	3475	2756	0005621		0175	14719	621												
124		OBS	0213	0455	34773	2757				14724	620	102	110	003	144	008							
		STD	0250	0459	3480	2759	0005395		0202	14732	621												
		STD	0300	0463	3484	2761	0005204		0229	14742	622												
		STD	0400	0473	3489	2764	0005050		0280	14763	624												
124		OBS	T0426	0475	34901	2765				14769	624	103	111	001	146	010							
		STD	0500	0461	3491	2767	0004876		0330	14775	619												
		STD	0600	0441	3491	2769	0004748		0378	14784	611												
124		OBS	T0639	0433	34911	2770				14787	608	100	112	006	163	010							
		STD	0700	0415	3490	2771	0004619		0425	14789	599												
		STD	0800	0395	3489	2773	0004555		0471	14797	589												
124		OBS	T0851	0388	34886	2773				14803	586	108	118	002	152	013							
		STD	0900	0388	3489	2773	0004574		0516	14811	587												
		STD	1000	0389	3490	2774	0004618		0562	14828	590												
124		OBS	T1065	0389	34900	2774				14839	592	115	126	008	169	012							
124		OBS	T1085	0393	34911	2774				14844	597	108	122	000	161	013							
		STD	1100	0393	3491	2775	0004641		0609	14847	597												
		STD	1200	0392	3492	2775	0004659		0655	14863	599												
124		OBS	T1277	0391	34926	2776				14876	600	111	120	000	168	012							

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT IN/10	MARSOEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS				WEA- CODE	CLOUD CODES		NOCC STATION NUMBER		
CRUISE CODE	IO. NO.					10"	1"	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT			
31	549	EV	60282N	061039W		223	01	07	30	140	1965	LCE	9437	0561	05	10	0	2		X2	4	8	0029		
						WATER		WIND		BARO- METER	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS										
						COLOR CODE	TRANS. UNIT	DIR.	SPEED OR FORCE		DRY BULB	WET BULB													
									16	508	135	061	050	8	12										

MESSNGR	CST	CARD	DEPTH	T °C	S %	SIGMA-T	SPECIFIC VOLUME	Σ Δ O	SOUND	O <sub>2</sub> ml/l	PO <sub>4</sub> -P	TOTAL-P	NO <sub>3</sub> -N	NO <sub>3</sub> -N	SiO <sub>4</sub> -Si	pH	ACC
TIME	NO.	TYPE	(m)				ANOMALY-318°	YN. M. x 10 <sup>3</sup>	VELOCITY		μg - at/l	μg - at/l	μg - at/l	μg - at/l	μg - at/l		
		STD	0000	0331	3314	2639	0016413	0000	14614	737							
140		OBS	0000	0331	33137	2639			14614	737	036	056	001	013	003		
		STD	0010	0303	3334	2658	0014645	0016	14606	731							
		STD	0020	0239	3348	2675	0013075	0029	14582	727							
		STD	0030	0139	3355	2688	0011852	0042	14541	726							
140		OBS	0030	0139	33548	2688			14541	726	059	071	012	048	004		
140		OBS	0039	0018	33556	2695			14488	727	069	082	011	058	005		
		STD	0050	0042	3359	2697	0010961	0065	14501	713							
140		OBS	0064	0073	33834	2715			14521	683	088	096	000	090	006		
		STD	0075	0265	3424	2733	0007566	0088	14613	644							
140		OBS	0079	0310	34335	2737			14634	635	097	106	021	131	007		
140		OBS	0098	0336	34395	2739			14649	626	082	088	018	106	006		
		STD	0100	0343	3441	2740	0006993	0106	14653	625							
140		OBS	0118	0397	34531	2744			14680	619	098	107	005	141	008		
		STD	0125	0418	3459	2746	0006403	0123	14691	616							
140		OBS	0147	0466	34720	2751			14717	608	098	109	001	148	008		
		STD	0150	0468	3473	2752	0005914	0138	14718	608							
140		OBS	T0196	0482	34806	2756			14732	605	099	106	001	126	008		
		STD	0200	0481	3481	2757	0005516	0167	14733	605							
		STD	0250	0469	3483	2760	0005288	0194	14736	599							
		STD	0300	0454	3484	2762	0005100	0220	14738	594							
140		OBS	T0304	0453	34842	2762			14739	593	109	123	005	140	012		
140		OBS	T0362	0432	34845	2765			14740	586	112	122	002	158	012		
		STD	0400	0432	3485	2765	0004925	0270	14746	586							
140		OBS	0478	0433	34845	2765			14759	586	099	113	002	147	011		

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INCHES	MARSOEN SQUARE	STATION TIME IGMT				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES	NOCC STATION NUMBER				
CITY CODE	IO. NO.						MO	DAY	HR.1/10	CRUISE NO.		STATION NUMBER	DIR.			HGT	PER	SEA	TYPE				AMT			
31	549	EV	60284N	061237W		223	01	07	30	157	1965	LCE	9438	0402	03	13	1	2		X4	7	8		0030		
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
						COLOR CODE	TRANS. UNIT	DIR.	SPEED OR FORCE		DRY BULB	WET BULB														
										15	509	135	050	040	1	11										

MESSNGR	CST	CARD	DEPTH	T °C	S %	SIGMA-T	SPECIFIC VOLUME	Σ Δ O	SOUND	O <sub>2</sub> ml/l	PO <sub>4</sub> -P	TOTAL-P	NO <sub>3</sub> -N	NO <sub>3</sub> -N	SiO <sub>4</sub> -Si	pH	ACC
TIME	NO.	TYPE	(m)				ANOMALY-318°	YN. M. x 10 <sup>3</sup>	VELOCITY		μg - at/l	μg - at/l	μg - at/l	μg - at/l	μg - at/l		
		STD	0000	0236	3081	2462	0033292	0000	14541	897							
157		OBS	0000	0236	30810	2462			14541	897	068	088	018	061	006		
		STD	0010	0179	3097	2479	0031699	0032	14520	888							
157		OBS	0013	0162	30999	2482			14513	886	052	109	005	000	004		
		STD	0020	0124	3105	2488	0030793	0064	14498	881							
157		OBS	0020	0124	31046	2488			14498	881	054	095	005	001	003		
		STD	0030	0002	3195	2567	0023288	0091	14456	811							
157		OBS	0040	-0060	32569	2619			14438	759	087	101	009	054	009		
		STD	0050	-0029	3279	2636	0016729	0131	14457	727							
157		OBS	0059	-0009	32931	2646			14470	709	093	104	010	075	009		
		STD	0075	0005	3304	2655	0014962	0170	14480	707							
157		OBS	0079	0009	33070	2657			14483	706	093	115	011	064	009		
		STD	0100	0022	3321	2667	0013743	0206	14495	701							
157		OBS	0118	0050	33372	2679			14513	695	094	108	013	080	010		
		STD	0125	0066	3344	2683	0012229	0239	14522	694							
		STD	0150	0140	3373	2702	0010498	0267	14563	683							
157		OBS	T0160	0177	33868	2711			14583	675	080	093	003	088	006		
157		OBS	T0194	0335	34459	2744			14666	629	094	103	012	135	008		
		STD	0200	0345	3449	2746	0006490	0310	14671	626							
157		OBS	T0236	0393	34631	2752			14700	611	103	113	003	134	009		
		STD	0250	0406	3467	2754	0005799	0340	14708	606							
		STD	0300	0428	3478	2760	0005261	0368	14727	595							
157		OBS	0302	0428	34780	2760			14727	595	107	115	003	149	011		

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	MARS SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER			
CRUISE CODE	ID. NO.					10"		1"			MO	DAY			HR./10	CRUISE NO.	STATION NUMBER	DIR.		HGT	PER		SEA	TYPE	AMT
31	549	EV	60285N	061382W	223	01	07	30	170	1965	LCE	9439	0389	04	19	1	2		X4	7	8		0031		
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS CODE		NO. OBS. DEPTH		SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. mm	DIR.	SPEED OR FORCE	DRY BULB	WET BULB	VIS CODE		NO. OBS. DEPTH		SPECIAL OBSERVATIONS									
									17	508	125	033	033	1	09										
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ σ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ol/l	TOTAL-P μg - ol/l	NO <sub>2</sub> -N μg - ol/l	NO <sub>3</sub> -N μg - ol/l	SiO <sub>4</sub> -Si μg - ol/l	pH	S CCT								
170		STD	0000	0242	3077	2458	0033652	0000	14543	870															
		OBS	0000	0242	30768	2458			14543	870	098	158	014	002	010										
		STD	0010	0037	3175	2549	0024981	0029	14466	829															
170		OBS	0015	-0024	32124	2582			14444	805	068	095	008	026	005										
		STD	0020	-0047	3240	2605	0019656	0052	14438	776															
		OBS	0025	-0061	32634	2625			14436	751	085	096	013	054	007										
170		STD	0030	-0044	3273	2632	0017136	0070	14446	738															
		STD	0050	0012	3304	2654	0015017	0102	14479	700															
		OBS	0050	0012	33038	2654			14479	700	098	109	014	068	010										
170		STD	0075	0049	3330	2673	0013226	0137	14504	688															
		OBS	0075	0049	33297	2673			14504	688	095	112	011	081	011										
		STD	0100	0067	3352	2690	0011612	0169	14519	683															
170		OBS	0100	0067	33522	2690			14519	683	091	109	012	065	009										
		STD	0125	0088	3370	2703	0010385	0196	14536	681															
		STD	0150	0115	3387	2715	0009269	0221	14554	678															
170		OBS	0151	0116	33881	2716			14555	678	095	111	007	096	009										
		STD	0200	0255	3429	2738	0007174	0262	14630	649															
		STD	0250	0356	3459	2753	0005888	0294	14686	627															
170		STD	0300	0415	3476	2760	0005270	0322	14721	610															
		OBS	T0305	0419	34771	2761			14724	609	110	126	007	138	012										
		OBS	T0389	0420	34771	2760			14738	597															

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT DIRECTION	MARS SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
DAY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT	
31	549	EV	60287N	061588W		223	01	07	30	191	1965	LCE	9440	0371	03	10	0	2		X1	3	7	0032	
						WATER		WIND		BARO- METER (mb)		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTH	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. mm	DIR.	SPEED OR FORCE	DRY BULB	WET BULB													
								17		505		112		033		033		8						
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ σ DYN. M. x 10 <sup>3</sup>		SOUND VELOCITY		O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ol/l	TOTAL-P μg - ol/l	NO <sub>2</sub> -N μg - ol/l	NO <sub>3</sub> -N μg - ol/l	SiO <sub>4</sub> -Si μg - ol/l	pH	S CCT			
191		STD	0000	0237	3216	2570		0023054		0000		14560		807	052	097	003	010	004					
		OBS	0000	0237	32160	2570						14560		807										
		STD	0010	0171	3244	2597		0020474		0022		14536		792										
		STD	0020	0124	3267	2618		0018430		0041		14520		780										
191		OBS	0026	0104	32791	2629						14514		773	061	093	010	033	006					
		STD	0030	0099	3285	2634		0016912		0059		14513		770										
		STD	0050	0091	3311	2655		0014902		0091		14516		754										
191		OBS	0050	0091	33108	2655						14516		754	068	085	011	048	006					
		STD	0075	0115	3329	2668		0013671		0126		14534		737										
191		OBS	0075	0115	33289	2668						14534		737	089	106	014	075	009					
191		OBS	0099	0094	33507	2687						14531		701										
		STD	0100	0095	3351	2687		0011868		0158		14532		701	095	123	017	086	012					
		STD	0125	0112	3360	2694		0011296		0187		14545		694										
191		OBS	0149	0129	33774	2706						14559		680	153	176	010	125	012					
		STD	0150	0133	3379	2707		0009996		0214		14561		679										
191		OBS	T0197	0278	34354	2741						14640		630	107	132	005	146	011					
		STD	0200	0286	3438	2743		0006768		0256		14645		629										
191		OBS	T0235	0358	34588	2752						14684		618	099	014	43	007						
		STD	0250	0376	3464	2755		0005714		0287		14695		613										
191		OBS	T0297	0408	34728	2758						14717		602	108	126	006	147	012					
		STD	0300	0408	3473	2758		0005433		0315		14718		602										
191		OBS	0345	0406	34728	2759						14724		600	108	126	006	130	014					

REFERENCE		SHIP	LATITUDE 10° 10°	LONGITUDE 10° 10°	MARS 10° 10°	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- TH- ER CODE	CLOUD CODES	NODC STATION NUMBER		
CTRY CODE	ID. NO.					MO	DAY	HR./10	CRUISE NO.		STATION NUMBER	DIR.			HGT	PER	SEA	TYPE				AMT	
31	549	EV	60288N	062208W	223	02	07	30	206	1965	LCE	9441	0342	03	12	0	4		X1	3	7		0033

31	549	EV	60288N	062208W	223	02	07	30	206	1965	LCE	9441	0342	03	12	0	4		X1	3	7			0033
					WATER		WIND		AIR TEMP. °C		BARO-METER (mb)		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS									
					COLOR	TRANS.	DIR.	SPEED	DRY	WET	VIS.													
					CODE	INT.		OR FORCE	BULB	BULB	CODE													
								16	508	125	092	092	8	11										

MESSAGE	CAS	CARD	DEPTH (m)	T °C	S %	SIGMA-T	SPECIFIC VOLUME	Σ Δ D	SOUND	O <sub>2</sub> ml/l	PO <sub>4</sub> -P	TOTAL-P	NO <sub>2</sub> -N	NO <sub>3</sub> -N	SiO <sub>4</sub> -Si	pH	CONT.
TIME	NO.	TYPE					ANOMALY-Σ10 <sup>3</sup>	DYN. M. X 10 <sup>3</sup>	VELOCITY		μg - ml/l	μg - ml/l	μg - ml/l	μg - ml/l	μg - ml/l		
HR. 1/10																	
		STD	0000	0222	3117	2492	0030438	0000	14540	915							
206		OBS	0000	0222	31173	2492			14540	915	044	106	004	000	001		
		STD	0010	0138	3161	2532	0026580	0029	14510	840							
		STD	0020	0080	3192	2561	0023892	0054	14490	790							
206		OBS	0021	0076	31945	2563			14489	786	073	103	010	029	005		
		STD	0030	0056	3205	2572	0022775	0077	14483	774							
206		OBS	0040	0044	32186	2584			14481	760	082	096	009	052	006		
		STD	0050	0046	3238	2599	0020200	0120	14486	745							
206		OBS	0059	0047	32520	2611			14490	735	088		010	055	008		
		STD	0075	0008	3265	2623	0017951	0168	14476	724							
206		OBS	0079	0002	32680	2626			14475	722	089	107	011	069	008		
		STD	0100	0009	3288	2641	0016191	0210	14484	730							
206		OBS	0118	0014	33084	2658			14492	733	092	117	012	068	009		
		STD	0125	0037	3318	2664	0014045	0248	14505	732							
		STD	0150	0108	3350	2686	0012029	0281	14546	730							
206		OBS	T0154	0118	33552	2689			14552	730	074	088	014	052	006		
206		OBS	0191	0194	33998	2720			14598	670	093	102	019	108	008		
		STD	0200	0203	3402	2721	0008784	0333	14604	668							
206		OBS	T0213	0227	34091	2724			14617	661	095	107	020	108	008		
206		OBS	0242	0328	34427	2742			14670	629	100	109	012	131	005		
		STD	0250	0340	3448	2745	0006556	0371	14677	625							
206		OBS	T0266	0344	34536	2750			14682	623	104	112	006	134	011		

REFERENCE		SHIP	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH INCHES	MARSON SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODE	NODC STATION NUMBER
CTRY NO.	IO. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA			
31	549	EV	60292N	062411W	223	02	07	30	230	1965	LCE	9442	0323	03	17	2	3		X1	3	7	0034

31	549	EV	60292N	062411W	223	02	07	30	230	1965	LCE	9442	0323	03	17	2	3		X1	3	7			0034
					WATER		WIND		AIR TEMP. °C		BARO-METER (mb)		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS									
					COLOR	TRANS.	DIR.	SPEED	DRY	WET	VIS.													
					CODE	INT.		OR FORCE	BULB	BULB	CODE													
								18	507	129	039	039	8	10										

MESSAGE	CAS	CARD	DEPTH (m)	T °C	S %	SIGMA-T	SPECIFIC VOLUME	Σ Δ D	SOUND	O <sub>2</sub> ml/l	PO <sub>4</sub> -P	TOTAL-P	NO <sub>2</sub> -N	NO <sub>3</sub> -N	SiO <sub>4</sub> -Si	pH	CONT.
TIME	NO.	TYPE					ANOMALY-Σ10 <sup>3</sup>	DYN. M. X 10 <sup>3</sup>	VELOCITY		μg - ml/l	μg - ml/l	μg - ml/l	μg - ml/l	μg - ml/l		
HR. 1/10																	
		STD	0000	0314	3089	2462	0033286	0000	14576	909							
230		OBS	0000	0314	30887	2462			14576	909	041	068	000	000	002		
		STD	0010	0172	3119	2497	0029990	0032	14520	880							
230		OBS	0010		31189				880		056	100	003	003	003		
		STD	0020	0072	3141	2520	0027741	0061	14479	822							
230		OBS	0024	0043	31497	2529			14468	804	072	096	007	030	005		
		STD	0030	0032	3164	2541	0025790	0087	14466	790							
230		OBS	0048	0010	31959	2567			14463	760	083	104	012	011	006		
		STD	0050	0009	3198	2569	0023080	0136	14463	759							
230		OBS	0072	0002	32167	2584			14466	752	086	102	008	051	007		
		STD	0075	0001	3218	2585	0021507	0192	14467	752							
230		OBS	0094	-0002	32317	2597			14470	749	086	099	009	063	008		
		STD	0100	-0001	3242	2605	0019656	0243	14473	742							
		STD	0125	0007	3279	2634	0016863	0289	14486	719							
230		OBS	T0142	0018	32995	2650			14497	708	106	138	009	082	010		
		STD	0150	0026	3302	2652	0015200	0329	14502	706							
230		OBS	T0187	0064	33366	2678			14530	697	096	106	011	096	010		
		STD	0200	0116	3369	2700	0010646	0394	14560	680							
230		OBS	T0223	0183	34075	2727			14599	662	091	096	015	113	009		
		STD	0250	0221	3414	2729	0008052	0440	14621	668							
230		OBS	0265	0224	34175	2731			14626	671	098	111	015	095	009		



REFERENCE		SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DRIFT INCHES	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPLE'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER					
CITY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT				
31	549	EV	60293N	062583W		223	Q2	07	31	005	1965	LCE 9443	0307	03	18	1	2		X1	3	6	0035					
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS												
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB															
									16	506	102	089	089	7	09												
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-210°	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	S CODE										
005		STD	0000	0181	3113	2491	0030511	0000	14521	923																	
		OBS	0000	0181	31128	2491			14521	923	048	095	004	073	002												
		STD	0010	0159	3114	2494	0030283	0030	14513	923																	
005		OBS	0016	0142	31171	2497			14507	923	044	092	004	000	002												
		STD	0020	0126	3120	2500	0029631	0060	14501	902																	
005		OBS	0027	0102	31259	2506			14492	869	053	100	005	003	002												
		STD	0030	0095	3128	2509	0028848	0090	14490	858																	
		STD	0050	0056	3147	2526	0027193	0146	14478	804																	
005		OBS	0052	0052	31493	2528			14477	800	071	096	007	032	005												
		STD	0075	0016	3180	2554	0024476	0210	14468	776																	
005		OBS	0079	0010	31869	2560			14467	773	084	100	009	039	007												
		STD	0100	-0016	3229	2595	0020582	0267	14464	759																	
005		OBS	0104	-0019	32351	2600			14465	757	087	105	010	042	008												
		STD	0125	-0010	3250	2612	0018994	0316	14474	744																	
		STD	0150	0004	3269	2626	0017602	0362	14487	730																	
005		OBS	0158	0009	32758	2632			14492	726	092	117	011	072	009												
		STD	0200	0042	3317	2663	0014136	0441	14520	705																	
005		OBS	T0210	0049	33253	2669			14526	701	095	113	010	083	009												
		STD	0250	0076	3352	2689	0011677	0506	14548	691																	
005		OBS	0283	0096	33669	2700			14565	689	099	112	014	099	010												

REFERENCE		SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DRIFT INCHES	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
CITY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT PER		SEA	TYPE		AMT	
31	549	EV	60294N	063167W		223	03	07	31	023	1965	LCE 9444	0316	03	15	1	2		X4	6	8		0036
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB											
									16	510	102	089	089	5	10								
MESSINGP TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-210°	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	S CODE						
		STD	0000	0258	3001	2396	0039551	0000	14540	919													
023		OBS	0000	0258	30006	2396			14540	919	045	084	003	000	002								
		STD	0010	0170	3106	2486	0030959	0035	14517	904													
023		OBS	0011	0162	31128	2492			14515	901	054	102	006	002	002								
		STD	0020	0093	3126	2507	0028993	0065	14487	860													
023		OBS	0026	0060	31354	2516			14474	838	060	095	009	015	003								
		STD	0030	0056	3144	2523	0027430	0093	14474	832													
		STD	0050	0041	3182	2555	0024450	0145	14476	802													
023		OBS	0051	0040	31839	2556			14476	801	072	095	007	030	004								
		STD	0075	0029	3214	2581	0021941	0203	14479	773													
023		OBS	0077	0027	32170	2583			14479	771	081	100	007	041	006								
		STD	0100	-0005	3248	2610	0019180	0255	14472	748													
023		OBS	0102	-0007	32507	2612			14472	746	089	102	009	059	008								
		STD	0125	-0014	3268	2626	0017605	0301	14475	735													
		STD	0150	-0021	3283	2639	0016419	0343	14478	725													
023		OBS	0154	-0022	32850	2640			14478	724	095	114	010	073	010								
		STD	0200	0010	3299	2650	0015332	0423	14503	716													
023		OBS	0206	0015	33011	2652			14506	715	095	106	012	079	010								
		STD	0250	0058	3320	2664	0014011	0496	14536	707													
023		OBS	T0284	0092	33343	2674			14559	701	098	107	010	084	011								
023		OBS	0298	0178	33916	2714			14607	670	087	101	016	099	010								

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	CHIEF INDICATOR	MARSOEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER					
CTRY CODE	ID. NO.					10'	1"	MO	DAY HR, 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT				
31	549	EV	60293N	063362W		223	03	07	31	041	1965	LCE	9445	0325	02	00	0	X		X4	7	1		0037		
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
						COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB														
								14	504		033	033	0	08												
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$		$\Sigma \Delta \sigma$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH									
041	STD	0000	0205	3158	2525	0027255	0000	14538	901																	
	OBS	0000	0205	31577	2525			14538	901		041	084	005	001	002											
	STD	0010	0132	3175	2544	0025479	0026	14509	844																	
041	STD	0020	0079	3192	2561	0023887	0051	14490	801																	
	OBS	0026	0058	32010	2569			14482	781		075	092	010	041	005											
	STD	0030	0057	3207	2574	0022625	0074	14483	775																	
041	STD	0050	0049	3234	2596	0020524	0117	14487	750																	
	OBS	0051	0049	32357	2597			14487	749		084	099	011	064	008											
	STD	0075	0049	3266	2622	0018077	0166	14495	725																	
041	OBS	0077	0049	32688	2624			14496	724		091	102	011	069	009											
	STD	0100	0065	3304	2651	0015267	0207	14512	713																	
	OBS	0102	0066	33060	2653			14513	712		094	113	012	088	009											
041	STD	0125	0067	3308	2654	0014971	0245	14517	706																	
	STD	0150	0069	3312	2658	0014676	0282	14523	702																	
	OBS	0154	0070	33125	2658			14524	701		098	111	012	088	010											
041	STD	0200	0080	3326	2668	0013675	0353	14538	697																	
	OBS	0206	0081	33276	2669			14540	696		094	107	011	098	010											
	OBS	0231	0084	33357	2676			14547	692		096	110	012	090	010											

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	CHIEF INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
CTRY CODE	ID. NO.					10'	1"	MO	DAY HR, 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT PER	SEA		TYPE	AMT			
31	549	EV	60292N	063561W	223	03	07	31	063	1965	LCE	9446	0316	03	00	0	X		X4	7	8		0038
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
		TRANS. COLOR CODE		DIR.		SPEED OF FORCE		DRY BULB														WET BULB	
						17		508		088		033		033		0		10					
MESSNGR TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY=σ <sub>t</sub> ?		Σ Δ σ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	CLD				
063	STD		0000	0237	3158	2523		0027492		0000	14552	886											
	OBS		0000	0237	31575	2523					14552	886		047	094	004	001	003					
	STD		0010	0094	3185	2554		0024518		0026	14494	822											
063	OBS		0010	0094	31848	2554					14494	822		067	092	006	028	005					
	STD		0020	0084	3211	2576		0022465		0049	14494	795											
	OBS		0024	0079	32194	2583					14494	785		077	099	008	053	007					
063	STD		0030	0066	3231	2593		0020843		0071	14491	770											
	OBS		0044	0047	32500	2609					14487	746		087	101	010	067	008					
	STD		0050	0047	3253	2611		0019064		0111	14488	744											
063	OBS		0067	0047	32613	2618					14492	740		085	100	010	066	009					
	STD		0075	0049	3264	2620		0018230		0158	14495	738											
	OBS		0089	0051	32668	2622					14499	735		089	101	010	064	009					
063	STD		0100	0052	3267	2622		0018027		0203	14501	734											
	OBS		0111	0054	32668	2622					14504	731		090	104	010	076	009					
	STD		0125	0057	3285	2637		0016664		0246	14510	723											
063	OBS		0128	0058	32882	2639					14511	722		090	101	010	082	009					
	STD		0150	0060	3290	2640		0016312		0288	14516	720											
	OBS		T0194	0064	32929	2643					14525	716		092		010		008					
063	STD		0200	0069	3297	2646		0015810		0368	14529	713											
	STD		0250	0134	3355	2688		0011835		0437	14575	677											
	OBS		0263	0159	33771	2704					14591	664		103	109	014	112	012					

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDICATOR	MARDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER					
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR	HGT		PER	SEA		TYPE	AMT			
31	549	EV	60270N	064128W		223	04	07	31	088	1965	LCE	9447	0201	02	15	0	X		X1	2	2		0039		
						WATER		WIND		AIR TEMP. °C				VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS										
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	BARO- METER (mbars)	DRY BULB	WET BULB														
									15	505	078	022	022	8	06											

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu g - \text{at/l}$	TOTAL-P $\mu g - \text{at/l}$	NO <sub>2</sub> -N $\mu g - \text{at/l}$	NO <sub>3</sub> -N $\mu g - \text{at/l}$	Si O <sub>4</sub> -Si $\mu g - \text{at/l}$	pH	S C C
088	OBS	STD	0000	0074	3158	2534	0026453	0000	14479	774							
		OBS	0000	0074	31581	2534			14479	774							
		STD	0010	0062	3190	2560	0023955	0025	14480	765							
		STD	0020	0054	3216	2581	0021929	0048	14482	757							
088	OBS	STD	0030	0049	3236	2598	0020352	0069	14484	751							
		OBS	0030	0049	32363	2598			14484	751	079	099	008	051	008		
088	OBS	STD	0050	0051	3253	2611	0019084	0109	14490	743							
		OBS	0059	0052	32590	2616			14493	740	083	101	007	068	008		
088	OBS	STD	0075	0053	3263	2619	0018324	0155	14496	737							
		OBS	0089	0053	32674	2623			14500	734	090	102	010	068	009		
088	OBS	STD	0100	0055	3273	2627	0017571	0200	14503	730							
		STD	0125	0059	3284	2636	0016751	0243	14511	724							
088	OBS	STD	0148	0063	32931	2643			14517	719	090	103	009	074	009		
		STD	0150	0063	3294	2643	0016011	0284	14518	719							
088	OBS	STD	0171	0067	33012	2649			14524	716	093	106	010	085	010		

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDICATOR	MARDEN SQUARE	STATION TIME IGMT			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.						10"	1"	MO DAY HR./10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER		SEA	TYPE		AMT
31	549	EV	60270N	064262W		223	04	07	31 099	1965	LCE	9448	0442	02	34	0	X		X1	3	3	0040
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS						
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	METER (mbars)	DRY BULB	WET BULB										
									14	504	146	038	033	8	08							

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu g - \text{at/l}$	TOTAL-P $\mu g - \text{at/l}$	NO <sub>2</sub> -N $\mu g - \text{at/l}$	NO <sub>3</sub> -N $\mu g - \text{at/l}$	Si O <sub>4</sub> -Si $\mu g - \text{at/l}$	pH	S C C
099	OBS	STD	0000	0057	3261	2617	0018546	0000	14486	736							
		OBS	0000	0057	32606	2617			14486	736	087	104	010	064	009		
		STD	0010	0056	3249	2608	0019415	0019	14485	743							
		STD	0020	0054	3238	2599	0020275	0039	14485	749							
099	OBS	STD	0023	0054	32342	2596			14485	751	086	102	008	069	009		
		STD	0030	0054	3247	2606	0019561	0059	14487	744							
099	OBS	STD	0043	0054	32620	2618			14492	737	089	103	010	070	009		
		STD	0050	0055	3262	2618	0018411	0097	14493	740							
099	OBS	STD	0065	0056	32622	2618			14496	743	089	104	013	073	009		
		STD	0075	0056	3262	2619	0018386	0143	14498	739							
099	OBS	STD	0087	0055	32627	2619			14499	735	089	104	010	076	009		
		STD	0100	0055	3262	2618	0018408	0189	14502	736							
099	OBS	STD	0125	0055	3262	2618	0018403	0235	14506	737							
		OBS	0130	0055	32616	2618			14506	737	089	104	010	076	009		
099	OBS	STD	0150	0055	3261	2617	0018474	0281	14510	737							
		OBS	0173	0055	32597	2616			14513	736	090	126	014	064	010		
099	OBS	STD	0200	0054	3260	2616	0018572	0373	14517	737							
		OBS	0216	0054	32594	2616			14520	737	089	106	011	072	009		

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDICATOR	MARDEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO DAY HR./10	CRUISE NO.		STATION NUMBER	DIR			HGT	PER	SEA		TYPE	AMT		
31	549	EV	60312N	064268W		223	04	07	31 107	1965	LCE	9449	0284	03	16	0	X		X1	3	3	0041
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS						
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	METER (mbars)	DRY BULB	WET BULB										
									14	504	078	039	033	8	08							

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu g - \text{at/l}$	TOTAL-P $\mu g - \text{at/l}$	NO <sub>2</sub> -N $\mu g - \text{at/l}$	NO <sub>3</sub> -N $\mu g - \text{at/l}$	Si O <sub>4</sub> -Si $\mu g - \text{at/l}$	pH	S C C
107	OBS	STD	0000	0034	3194	2565	0023496	0000	14466	773							
		OBS	0000	0034	31943	2565			14466	773	081	103	007	051	008		
		STD	0010	0037	3216	2582	0021849	0023	14472	766							
		STD	0020	0040	3233	2596	0020563	0044	14477	759							
107	OBS	STD	0025	0041	32403	2602			14480	756	085	105	008	063	008		
		STD	0030	0042	3244	2604	0019730	0064	14482	752							
		STD	0050	0044	3257	2615	0018759	0103	14488	739							
107	OBS	STD	0050	0044	32568	2615			14488	739	084	106	009	070	009		
107	OBS	STD	0074	0048	32669	2623			14495	735	090	104	007	073	009		
		STD	0075	0048	3267	2623	0017996	0148	14495	735							
107	OBS	STD	0097	0047	32779	2631			14500	725	090	104	008	078	010		
		STD	0100	0047	3280	2633	0016996	0192	14500	724							
		STD	0125	0048	3295	2645	0015855	0233	14507	717							
107	OBS	STD	0147	0049	33039	2652			14512	713	093	109	009	082	010		
		STD	0150	0049	3304	2652	0015171	0272	14513	713							
107	OBS	STD	0195	0049	33073	2655			14521	714	094	106	008	089	010		
		STD	0200	0049	3308	2655	0014859	0347	14522	714							
		STD	0250	0050	3313	2659	0014477	0420	14531	711							
107	OBS	STD	0254	0050	33133	2660			14532	711	093	106	009	094	010		

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INCHES	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER					
CTRY CODE	ID. NO.					10"	1"	MO	DAY		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT						
31	549	EV	60380N	064288W	223	04	07	31	125	1965	LCE	9450	0243	02	00	0	X		X1	8	4	0042					
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
COLOR CODE		TRANS. m		DIR.	SPEED OR FORCE	mbs		DRY BULB	WET BULB																		
						25		507		088		061		056		8		08									
MESSAGE TIME HR 1/10	CAS ND.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>2</sub> -N μg - dl/l	NO <sub>3</sub> -N μg - dl/l	SiO <sub>4</sub> -Si μg - dl/l	pH	S CC								
125		STD	0000	0031	3246	2607		0019525		0000	14472	757															
		OBS	0000	0031	32461	2607					14472	757	085	101	010	065	008										
		STD	0010	0031	3252	2611		0019070		0019	14474	751															
125		STD	0020	0030	3256	2615		0018760		0038	14476	747															
		OBS	0024	0030	32566	2615					14477	745	087	103	009	069	009										
		STD	0030	0031	3257	2615		0018713		0057	14478	745															
125		OBS	0048	0032	32568	2615					14482	740	092	110	014	066	009										
		STD	0050	0033	3259	2617		0018536		0094	14483	737															
		OBS	0074	0044							715	715	093	126	009	066	009										
125		STD	0075	0044	3279	2632		0017062		0139	14495	715															
		STD	0100	0050	3296	2646		0015816		0180	14504	721															
		OBS	0100	0050	32957	2646					14504	721	090	102	010	080	009										
125		STD	0125	0059	3308	2655		0014926		0218	14514	720															
		STD	0150	0069	3319	2663		0014144		0255	14524	719															
		OBS	T0152	0070	33193	2663					14525	719	096	117	011	081	011										
125		STD	0200	0090	3330	2671		0013433		0324	14543	705															
		OBS	T0205	0092	33325	2673					14545	703	107	140	013	092	011										
		OBS	0231	0102	33457	2683					14556	691	093	106	010	098	017										

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INCHES	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT	
31	549	EV	60437N	064318W	223	04	07	31	148	1965	LCE	9451	0310	03	30	0	4		X1	8	3	0043
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS										
COLOR CODE	TRANS. m	DIR.	SPEED OR FORCE	mbs	DRY BULB	WET BULB																
		13	501	078	078	067	8	09														
MESSAGE TIME HR 1/10	CASE NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>2</sub> -N μg - dl/l	NO <sub>3</sub> -N μg - dl/l	SiO <sub>4</sub> -Si μg - dl/l	pH	S CC				
148		STD	0000	0162	3160	2530	0026795		0000	14519	853											
		OBS	0000	0162	31601	2530				14519	853	054	077	003	008	004						
		STD	0010	0096	3181	2551	0024819		0026	14494	812											
148		STD	0020	0052	3201	2569	0023063		0050	14479	781											
		OBS	0026	0036	32120	2579				14474	768	082	097	007	051	007						
		STD	0030	0039	3220	2585	0021547		0072	14477	765											
148		OBS	0049	0046	32496	2609				14487	751	086	106	011	072	008						
		STD	0050	0046	3250	2609	0019287		0113	14488	751											
		STD	0075	0043	3261	2618	0018397		0160	14492	740											
148		OBS	0075	0043	32614	2618				14492	740	090	106	009	072	008						
148		OBS	0096	0053	32780	2631				14502	732	094	103	009	070	009						
148		STD	0100	0054	3279	2632	0017109		0204	14503	731											
		STD	0125	0060	3288	2639	0016452		0246	14511	724											
		OBS	T0142	0064	32979	2647				14518	718	092	102	010	083	009						
148		STD	0150	0065	3303	2651	0015337		0286	14520	715											
		OBS	T0184	0086	33317	2672				14539	697	096	104	010	165	010						
		STD	0200	0119	3356	2690	0011651		0354	14560	682											
148		OBS	T0236	0169	33916	2715				14593	660	103	113	011	115	011						
148		STD	0250	0180	3399	2720	0008849		0405	14601	659											
		OBS	0288	0183	33997	2720				14609	657	105	129	013	116	013						



REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDICATOR	MARS DEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA				
31	549	EV	60488N	064350W		223	04	07	31	160	1965	LCE	9452	0338	03	21	1	2		X4	X 9		0044
		WATER		WIND		BARO- METER		AIR TEMP. °C		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS											
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mb)		DRY BULB	WET BULB	VIS. CODE													
						19	S18	075	039	039	0	06											
MESSAGE TIME OF HR 1/10	CAS ND.	CARD TYPE	DEPTH (m)	T °C	S %.	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>θ</sub>	Σ Δ σ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiD <sub>4</sub> -Si μg - ml/l	pH	3 CODE						
160		STD	0000	0108	3176	2546	0025283	0000	14497	836													
		OBS	0000	0108	31758	2546			14497	836	062	088	005	021	005								
		STD	0010	0068	3190	2560	0023986	0025	14483	811													
		STD	0020	0037	3201	2570	0022991	0048	14472	792													
160		STD	0030	0014	3210	2578	0022194	0071	14464	778													
		OBS	0033	0009	32126	2581			14463	775	082	099	008	054	007								
		STD	0050	0001	3219	2586	0021441	0114	14463	771													
		OBS	0060	-0002	32246	2591			14464	768	088	106	010	128	009								
160		STD	0075	-0002	3243	2606	0019585	0166	14469	757													
		STD	0100	-0002	3267	2625	0017744	0212	14476	742													
		OBS	0116	-0002	32781	2634			14480	735	091	105	009	063	009								
		STD	0125	-0000	3279	2635	0016829	0256	14483	734													
160		STD	0150	0005	3285	2639	0016389	0297	14490	730													
		OBS	T0172	0010	32930	2645			14497	725	093	108	010	082	010								
		STD	0200	0025	3307	2656	0014803	0375	14511	717													
		STD	0250	0066	3342	2682	0012373	0443	14542	697													
160		OBS	T0272	0090	33611	2696			14559	686	100	102	010	088	011								

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDICATOR	MARS DEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS			CLOUD CODES	WEA- THER CODE	NDDC STATION NUMBER			
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT				PER	SEA	
31	549	EV	60536N	064348W		223	04	07	31	173	1965	LCE	9453	0421	03	17	2	2		X4	X 9		0045
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mb)		DRY BULB	WET BULB														
									20	S16	068	039	039	0	08								
MESSAGS TIME OF HR 1/10	CAST ND.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ σ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SIO <sub>4</sub> -Si μg - ml/l	pH	3 CODE						
173		STD	0000	0035	3218	2584	0021667	0000	14470	789													
		OBS	0000	0035	32183	2584			14470	789	080	097	009	049	007								
		STD	0010	0033	3218	2584	0021702	0022	14471	790													
		STD	0020	0032	3217	2583	0021737	0043	14471	791													
173		OBS	0024	0031	32169	2583			14472	791	078	101	009	046	007								
		STD	0030	0022	3235	2598	0020321	0064	14471	773													
		OBS	0042	0011	32599	2619			14472	748	090	107	009	071	009								
		STD	0050	0018	3260	2618	0018388	0103	14476	748													
173		STD	0075	0031	3261	2618	0018390	0149	14486	746													
		OBS	0075	0031	32607	2618			14486	746	091	104	009	070	009								
		STD	0100	0029	3263	2620	0018213	0195	14490	742													
		STD	0125	0023	3265	2622	0018023	0240	14491	739													
173		OBS	T0131	0021	32653	2623			14492	738	091	104	009	070	009								
		STD	0150	0012	3272	2628	0017412	0284	14492	743													
		OBS	T0162	0008	32767	2632			14492	744	090	113	009	070	010								
		STD	0200	0005	3296	2648	0015534	0367	14500	732													
173		OBS	T0210	0004	33022	2653			14502	728	101	104	010	090	010								
		STD	0250	0043	3335	2678	0012767	0438	14531	707													
		STD	0300	0146	3391	2716	0009210	0493	14593	672													
		OBS	T0324	0217	34237	2737			14633	651	102	114	008	125	012								

REFERENCE CTRY CODE	ID. NO.	SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DUST INDEX	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER			
						10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT				
						10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA		TYPE	AMT				
31	549	EV	60596N	064257W	223	04	07	31	190	1965	LCE	9454	0428	04	22	1	2		X4	X	9		0046			
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS										
						COLOR CODE	TRANS. IMT	DIR.	SPEED OR FORCE	IMB	DRY BULB	WET BULB														
									20	510	091	022	022	0	10											
MESSAGE TIME HR. 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta \rho$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH										
190		STD	0000	0095	3220	2582		0021827	0000	14497	822															
		OBS	0000	0095	32202	2582				14497	822	061	079	006	025	004										
		STD	0010	0053	3227	2590	0021087	0021	14481	815																
		STD	0020	0020	3233	2597	0020468	0042	14468	808																
190		OBS	0028	0000	32375	2601			14461	803	074	094	007	038	008											
		STD	0030	-0003	3238	2602	0019965	0062	14460	803																
		STD	0050	-0025	3245	2608	0019367	0102	14454	794																
190		OBS	0055	-0028	32463	2610			14454	789	083	102	008	046	007											
		STD	0075	-0030	3286	2642	0016179	0146	14462	750																
		OBS	0083	-0031	32982	2651			14464	737	097	102	011	071	009											
190		STD	0100	-0026	3317	2666	0013820	0184	14472	711																
		OBS	0108	-0024	33245	2672			14475	703	095	107	010	079	010											
		STD	0125	-0018	3325	2672	0013240	0218	14481	706																
190		STD	0150	-0008	3333	2678	0012667	0250	14491	709																
		OBS	0161	-0004	33400	2684			14495	711	098	110	008	077	010											
		STD	0200	0112	3388	2716	0009180	0305	14561	674																
190		OBS	T0215	0143	34003	2724			14579	664	102	113	008	119	011											
		STD	0250	0154	3406	2728	0008125	0348	14591	657																
		STD	0300	0178	3414	2732	0007718	0387	14611	647																
190		OBS	T0302	0179	34146	2733			14612	647	097	102	008	099	011											
190		OBS	T0381	0240	34294	2740			14653	645	104	106	009	133	011											
		STD	0400	0251	3432	2741	0007022	0461	14662	640																
190		OBS	0428	0265	34355	2742			14673	631	110	119	011	127	012											

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DUST INDEX	MARSDEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER				
CTRY CODE	ID. NO.						MO	DAY	HR./10		CRUISE NO.	STATION NUMBER								DIR	HGT		PER	SEA	TYPE	AMT
															10"	1"	10"	1"								
31	549	EV	61029N	064312W	223	14	07	31	211	1965	LCE	9455	0567	05	20	2	2		X1	3	6	0047				
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS										
						COLOR CODE	TRANS. IMT	DIR.	SPEED OR FORCE	IMB	DRY BULB	WET BULB														
									21	508	081	061	050					8	10							
MESSAGE TIME HR. 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta \rho$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH										
211		STD	0000	0191	3328	2662	0014239	0000	14555	746																
		OBS	0000	0191	33279	2662			14555	746	054	070	007	034	005											
		STD	0010	0189	3328	2663	0014220	0014	14556	747																
		STD	0020	0183	3328	2663	0014180	0028	14555	747																
211		OBS	0026	0178	33287	2664			14554	748	050	067	007	033	004											
		STD	0030	0171	3330	2665	0013971	0043	14551	749																
		STD	0050	0143	3335	2671	0013415	0070	14543	751																
211		OBS	0051	0142	33348	2671			14543	751	056	082	008	037	005											
		STD	0075	0126	3337	2674	0013125	0103	14540	759																
211		OBS	0077	0123	33373	2675			14539	760	063	079	009	039	005											
		STD	0100	0078	3343	2682	0012376	0135	14523	738																
		OBS	0102	0076	33435	2682			14523	736	062	078	008	046	005											
		STD	0125	0087	3370	2703	0010379	0163	14535	720																
211		STD	0150	0127	3397	2722	0008592	0187	14561	696																
		OBS	0155	0138	34016	2725			14567	691	094	106	014	107	008											
		STD	0200	0302	3441	2743	0006687	0225	14652	629																
		OBS	T0206	0317	34442	2745			14660	623	098	104	009	164	010											
211		STD	0250	0320	3447	2747	0006435	0258	14669	604																
		STD	0300	0323	3449	2748	0006350	0290	14678	582																
		OBS	T0306	0323	34493	2748			14680	579	103	112	008	118	011											
		STD	0400	0326	3450	2748	0006395	0354	14696	620																
211		OBS	T0408	0326	34498	2748			14698	622	105	118	009	131	012											
		STD	0500	0329	3450	2748	0006486	0418	14714	625																
211		OBS	T0549	0331	34507	2748			14723	627																

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	EAST INCHES	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CITY CODE	ID. NO.					10"	1"	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR	HGT	PER		SEA	TYPE		AMT
31	549	EV	61077N	064461W	223	14	07	31	229	1965	LCE	9456	0367	03	19	0	X		X4	X	9		0048
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. mm	DIR.	SPEED OF FORCE	DRY BULB	WET BULB												
								22	515	078	056	044	0	09									
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY- $\sigma_t$		$\Sigma \Delta$ D DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} \cdot \text{at/l}$	TOTAL-P $\mu\text{g} \cdot \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} \cdot \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} \cdot \text{at/l}$	pH	S C				
229		STD	0000	0162	3331	2667		0013836		0000	14543	745											
		OBS	0000	0162	33306	2667					14543	745	058	076	007	043	005						
		STD	0010	0141	3332	2669		0013594		0014	14535	745											
		STD	0020	0121	3333	2671		0013393		0027	14528	744											
229		OBS	0022	0117	33337	2672					14527	744	064	084	008	045	006						
		STD	0030	0099	3336	2675		0013032		0040	14520	745											
229		OBS	0041	0084	33389	2678					14516	746	067	118	011	055	006						
		STD	0050	0086	3339	2678		0012728		0066	14518	747											
229		OBS	0062	0089	33408	2680					14522	748	065	085	010	054	005						
		STD	0075	0130	3345	2680		0012544		0098	14543	738											
		OBS	0082	0149	33503	2683					14553	730	064	075	012	054	005						
229		STD	0100	0184	3386	2709		0009814		0126	14576	691											
		OBS	0122	0223	34168	2731					14601	657	101	119	012	128	010						
		STD	0125	0228	3419	2732		0007667		0148	14604	655											
229		STD	0150	0267	3431	2739		0007098		0166	14627	644											
		OBS	T0168	0289	34381	2742					14641	637	103	110	010	125	010						
		STD	0200	0311	3444	2745		0006544		0200	14656	633											
229		STD	0250	0328	3448	2747		0006425		0233	14672	626											
		OBS	T0250	0328	34482	2747					14672	626	099	104	010	134	011						
229		OBS	0280	0329	34480	2747					14678	622			020	139	025						

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	EAST INCHES	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER				
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR	HGT PER		SEA	TYPE		AMT			
31	549	EV	61122N	064504W	223	14	08	01	014	1965	LCE	9457	0311	03	20	1	X		X1	3	7	0049			
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. mm	DIR.	SPEED OF FORCE	DRY BULB	WET BULB														
								22	513	085	033	022	7					09							
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta$ D DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} \cdot \text{at/l}$	TOTAL-P $\mu\text{g} \cdot \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} \cdot \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} \cdot \text{at/l}$	pH	S C								
014		STD	0000	0135	3315	2656	0014816	0000	14528	752															
		OBS	0000	0135	33154	2656			14528	752	061	076	007	029	020										
		STD	0010	0108	3321	2662	0014226	0015	14519	745															
014		STD	0020	0089	3325	2667	0013811	0029	14512	740															
		OBS	0026	0080	33272	2669			14510	739	080	096	010	048	007										
		STD	0030	0079	3327	2669	0013578	0042	14510	740															
014		STD	0050	0073	3328	2670	0013505	0069	14511	745															
		OBS	0052	0072	33278	2670			14510	745	076	093	009	054	008										
		STD	0075	0068	3335	2676	0012925	0102	14513	732															
014		OBS	0078	0067	33362	2677			14514	730	070	078	010	067	008										
		STD	0100	0083	3355	2691	0011493	0133	14527	718															
		OBS	0104	0085	33575	2693			14529	716	084	098	010	082	010										
014		STD	0125	0088	3361	2696	0011070	0161	14534	699															
		STD	0150	0092	3368	2701	0010564	0188	14541	686															
		OBS	0155	0093	33702	2703			14543	684	091	106	010	092	009										
014		OBS	0192	0127	33864	2714			14566	678	136	153	010	098	010										
		STD	0200	0163	3400	2722	0008631	0236	14586	665															
		OBS	T0223	0241	34278	2738			14627	637	099	107	008	129	010										
014		STD	0250	0249	3430	2739	0007065	0275	14636	637															
		OBS	T0286	0259	34332	2741			14646	636	103	112	008	128	011										

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INCHES	MARS DEN	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER			
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT				
31	549	EV	61174N	064464W	223	14	08	01	036	1965	LCE	9458	0265	02	20	2	2		X1	3	5		0050			
						WATER		WIND		BARO- METER	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB														
								20	509		081	039					039	7	08							
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-310°		Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY		O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH							
036		STD	0000	0003	3321	2668		0013660		0000	14469		745	085	102	012	065	008								
		OBS	0000	0003	33212	2668					14469		745													
		STD	0010	0002	3322	2669		0013608		0014	14471		745													
036		STD	0020	0001	3322	2670		0013556		0027	14472		745	087	098	012	063	008								
		OBS	0025	0001	33227	2670					14473		745													
		STD	0030	0001	3323	2670		0013528		0041	14474		743													
036		OBS	0048	0001	33228	2670					14477		741	085	098	011	063	008								
		STD	0050	0001	3322	2669		0013577		0068	14477		742													
		OBS	0071	0001	33179	2666					14480		745													
036		STD	0075	0002	3316	2664		0014032		0102	14481		744	092	101	013	062	009								
		OBS	0095	0003	33116	2661					14484		740													
		STD	0100	0001	3313	2662		0014249		0138	14484		740													
036		STD	0125	-0008	3321	2669		0013589		0173	14485		740	089	104	011	064	009								
		OBS	0141	-0014	33250	2672					14485		740													
		STD	0150	-0019	3326	2673		0013149		0206	14485		739													
036		OBS	T0186	-0030	33314	2678					14486		735	082	096	013	069	009								
		STD	0200	-0029	3333	2679		0012553		0270	14489		733													
		OBS	0235	-0016	33378	2683					14502		725													

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INCHES	MARS DEN SQUARE		STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER			
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10	CRUISE NO.		STATION NUMBER	DIR.			HGT	PER	SEA		TYPE	AMT				
31	549	EV	60437N	066051W	223	06	08	01	100	1965	LCE	9459		0640	06	20	3	X		X1	3	7		0051		
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB														
									16	510	075	050	044	10												
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-310°		Σ Δ D DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH								
100		STD	0000	0203	3149	2519		0027887		0000	14536	867														
		OBS	0000	0203	31492	2519					14536	867			052	077	004	004	003							
		STD	0010	0125	3208	2571		0022926		0025	14511	852														
100		STD	0020	0061	3255	2612		0018990		0046	14490	832														
		OBS	0025	0033	32742	2629					14481	819	060	085	009	024	004									
		STD	0030	0006	3286	2640		0016353		0064	14471	796														
100		STD	0050	-0057	3323	2673		0013252		0094	14450	733														
		OBS	0050	-0057	33230	2673					14450	733	084	104	010	068	009									
		STD	0075	-0040	3341	2686		0011966		0125	14465	718														
100		OBS	0075	-0040	33406	2686					14465	718	095	110	012	074	009									
		STD	0100	-0043	3346	2690		0011548		0155	14468	707														
		OBS	0100	-0043	33458	2690					14468	707	097	114	011	075	010									
100		STD	0125	-0025	3357	2699		0010766		0182	14482	687														
		OBS	0141	-0014	33632	2703					14491	678	103	112	012	096	012									
		STD	0150	-0009	3365	2704		0010226		0209	14495	676														
100		STD	0200	0023	3374	2710		0009707		0259	14519	665														
		OBS	0200	0023	33739	2710					14519	665	106	118	011	106	013									
		STD	0250	0057	3383	2715		0009210		0306	14544	662														
100		STD	0300	0098	3395	2722		0008583		0350	14572	655														
		OBS	T0300	0098	33948	2722					14572	655	104	110	012	119	012									
		STD	0400	0201	3423	2738		0007264		0430	14639	632														
100		OBS	T0402	0202	34236	2738					14639	631	103	109	004	129	012									
		STD	0500	0216	3426	2739		0007181		0502	14662	627														
		STD	0600	0231	3429	2740		0007141		0573	14686	623														
100		OBS	T0602	0231	34294	2740					14686	623	115	121	002	138	012									



REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPTH INDICATOR	MARS SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR.		1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT		PER	SEA		TYPE
31	549	EV	60378N	065511W	223	05	08	01	114	1965	LCE	9460	0338	03	13	2	2		X1	3	6	0052	
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	(mba)	DRY BULB	WET BULB											
									13	S08	064			8	09								
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$		$\Sigma \Delta \rho$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} \cdot \text{ol/l}$	TOTAL-P $\mu\text{g} \cdot \text{ol/l}$	NO <sub>2</sub> -N $\mu\text{g} \cdot \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{ol/l}$	SiO <sub>4</sub> -Si $\mu\text{g} \cdot \text{ol/l}$	pH	S.C.C.					
		STD	0000	0102	3208	2572	0022826		0000	14499	826												
114		OBS	0000	0102	32076	2572				14499	826												
114		OBS	0008	0088	32088	2574				14494	770	064	089	006	026	005							
		STD	0010	0079	3213	2578	0022288		0023	14491	780												
		STD	0020	0031	3237	2599	0020206		0044	14474	806												
114		OBS	0020	0031	32371	2599				14474	806	073	096	006	039	007							
		STD	0030	-0033	3274	2632	0017103		0062	14451	769												
114		OBS	0040	-0074	32978	2653				14437	745	094	106	008	064	010							
		STD	0050	-0081	3301	2656	0014847		0094	14436	740												
114		OBS	0061	-0086	33057	2660				14436	735	103	123	007	071	012							
		STD	0075	-0090	3312	2665	0013962		0130	14438	731												
114		OBS	0081	-0091	33141	2667				14438	730	101	113	008	077	010							
		STD	0100	0011	3319	2666	0013840		0165	14489	727												
114		OBS	T0120	0095	33238	2666				14531	723	108	131	009	077	011							
		STD	0125	0093	3324	2666	0013905		0200	14531	722												
		STD	0150	0080	3327	2669	0013599		0234	14530	718												
		OBS	0165		33307					714	714	101	110	008	084	011							
		STD	0200	0054	3343	2683	0012230		0299	14529	702												
		STD	0250	0029	3369	2706	0010104		0355	14529	678												
114		OBS	T0253	0027	33713	2708				14529	676	109	112	010	102	013							

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPTH INDIC	MARS DEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT
31	549	EV	60308N	065344W	223	05	08	01	132	1965	LCE	9461	0421	04	13	2	2		X1	3	7	0053	
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
		COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	(mba)	DRY BULB	WET BULB															
				14	S12	064	061	044	8					10									
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ ρ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ol/l	TOTAL-P μg - ol/l	NO <sub>2</sub> -N μg - ol/l	NO <sub>3</sub> -N μg - ol/l	SiO <sub>4</sub> -Si μg - ol/l	pH	S.C.C.				
132		STD	0000	0158	3145	2518		0027934		0000	14515	865											
		OBS	0000	0158	31448	2518					14515	865											
		STD	0010	0054	3210	2576		0022389		0025	14479	827	661	082	007	010	004						
		STD	0020	-0020	3258	2619		0018384		0046	14453	797											
132		OBS	0024	-0041	32729	2631					14446	787	073	088	008	037	005						
		STD	0030	-0049	3285	2642		0016199		0063	14445	777											
132		OBS	0046	-0068	33074	2660					14442	754	084	099	009	046	007						
		STD	0050	-0072	3309	2662		0014267		0093	14441	752											
132		OBS	0069	-0084	33180	2670					14440	735	087	100	009	063	008						
		STD	0075	-0083	3324	2674		0013067		0127	14442	724											
132		OBS	0092	-0081	33372	2685					14448	702	104	133	011	082	011						
		STD	0100	-0079	3339	2686		0011924		0159	14451	701											
		STD	0125	-0072	3344	2690		0011557		0188	14459	698											
132		OBS	0138	-0068	33468	2692					14463	696	104	112	012	092	012						
		STD	0150	-0050	3350	2694		0011179		0216	14474	694											
132		OBS	T0185	-0002	33611	2701					14503	686	102	107	012	092	012						
		STD	0200	0023	3370	2707		0010003		0269	14518	681											
		STD	0250	0078	3389	2719		0008887		0317	14554	666											
132		OBS	T0256	0082	33907	2720					14557	664	102	113	011	106	012						
132		OBS	T0276	0089	33930	2721					14564	658	095	109	009	104	010						
		STD	0300	0096	3395	2723		0008554		0360	14572	653											
132		OBS	T0380	0109	33993	2725					14591	653	100	112	008	109	012						

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	MARS- DEN SQUA- RE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER					
CTRY CODE	ID. NO.					10°	1°	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT				
31	549	EV	60244N	065188W	223	05	08	01	148	1965	LCE	9462	0251	02	00	0	X		X1	3	6		0054				
						WATER		WIND		BARO- METER (mba)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS												
						COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB															
								12	S12	037	083	061	8	07													
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-20°	Σ Δ D DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S C C										
148		STD	0000	0055	3155	2533	0026566	0000	14470	865																	
		OBS	0000	0055	31554	2533			14470	865	059	081	005	011	004												
		STD	0010	0024	3162	2539	0025915	0026	14459	857																	
		STD	0020	-0007	3175	2551	0024785	0052	14448	850																	
148		OBS	0025	-0023	31837	2559			14443	846	077	098	008	027	005												
		STD	0030	-0048	3200	2573	0022710	0075	14434	822																	
		STD	0050	-0105	3256	2620	0018217	0116	14419	752																	
148		OBS	0051	-0106	32584	2622			14419	750	092	124	011	057	009												
		STD	0075	-0071	3304	2658	0014641	0157	14445	726																	
148		OBS	0076	-0070	33053	2659			14446	725	102	108	012	076	011												
		STD	0100	-0051	3312	2663	0014096	0193	14460	722																	
148		OBS	0101	-0050	33125	2664			14461	722	092	107	012	078	010												
		STD	0125	-0032	3325	2673	0013174	0227	14475	714																	
		STD	0150	-0015	3336	2681	0012406	0259	14488	696																	
148		OBS	T0151	-0014	33365	2682			14489	695	105	110	013	090	011												
		STD	0200	0016	3355	2695	0011105	0318	14513	629																	
148		OBS	T0227	0031	33639	2701			14526	576	103	111	011	099	012												

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	MARS- DEN SQUA- RE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER					
CTRY CODE	ID. NO.					10°	1°	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT				
31	549	EV	60194N	065094W	223	05	08	01	165	1965	LCE	9463	0256	02	00	0	X		X1	3	3		0055				
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS												
						COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB															
								19	S10	037	128	094	8	06													
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-20°	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S C C										
165		STD	0000	0083	3010	2415	0037800	0000	14463	848																	
		OBS	0000	0083	30101	2415			14463	848	064	095	005	007	005												
		STD	0010	0051	3038	2439	0035516	0037	14454	867																	
		STD	0020	0022	3070	2466	0032938	0071	14447	886																	
165		OBS	0025	0008	30886	2481			14444	895	059	104	003	001	003												
		STD	0030	-0008	3116	2504	0029291	0102	14441	873																	
165		STD	0050	-0054	3198	2571	0022844	0154	14434	803																	
		OBS	0050	-0054	31978	2571			14434	803	073	112	008	098	006												
165		STD	0075	-0062	3230	2598	0020336	0208	14439	760																	
		OBS	0078	-0063	32347	2602			14440	755	087	106	010	047	008												
		STD	0100	-0026	3290	2645	0015881	0253	14468	726																	
		STD	0125	0002	3332	2677	0012800	0289	14491	704																	
165		OBS	T0126	0003	33329	2678			14492		101	115	012	100	011												
		STD	0150	0006	3337	2681	0012418	0321	14498	691																	
165		OBS	T0179	0010	33425	2685			14505	690	078	098	007	035	006												

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INCHES	MARDEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.						10"	1"	MO		DAY	HR./1/10			CRUISE NO.	STATION NUMBER	DIR.		HGT PER	SEA		TYPE
31	549	EV	61367N	06000 W	223	10	08	02	201	1965	LCE	9464	1719	13	20	5	3		X2	5	8	0056
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS						
						COLOR CODE	TRANS. INCH	DIR.	SPEED OF FORCE	METER (mbars)	DRY BULB	WET BULB										
									28	510	078	067	061	8	12							

MESSING TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta$ D DYN. M. $\times 10^2$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ol/l}$	TOTAL-P $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	Si O <sub>4</sub> -Si $\mu\text{g} - \text{ol/l}$	pH	S C C
	201	STD	0000	0676	3344	2624	0017854	0000	14761	676							
		OBS	0000	0676	33437	2624			14761	676	019	037	002	000	001		
		STD	0010	0659	3356	2636	0016735	0017	14757	693							
		STD	0020	0623	3371	2653	0015183	0033	14746	703							
	201	OBS	0028	0581	33839	2668			14732	706	028	049	004	010	002		
		STD	0030	0554	3389	2675	0013032	0047	14722	705							
		STD	0050	0371	3430	2728	0008046	0068	14655	689							
	201	OBS	0055	0349	34383	2737			14648	683	088	098	032	092	006		
		STD	0075	0393	3463	2752	0005801	0086	14673	649							
	201	OBS	0083	0405	34693	2756			14680	640	101	109	046	096	008		
		STD	0100	0416	3474	2758	0005232	0100	14688	633							
	201	OBS	0110	0423	34761	2759			14693	630	100	113	003	142	007		
		STD	0125	0440	3478	2759	0005209	0113	14703	630							
		STD	0150	0462	3481	2759	0005249	0126	14717	629							
	201	OBS	0166	0472	34823	2759			14724	629	105	115	002	153	009		
		STD	0200	0479	3485	2760	0005195	0152	14732	635							
	201	OBS	T0224	0483	34873	2762			14738	638	104	109	001	152	009		
		STD	0250	0480	3488	2762	0005077	0177	14741	636							
		STD	0300	0474	3488	2763	0005043	0203	14747	634							
		STD	0400	0462	3488	2765	0004979	0253	14759	629							
	201	OBS	T0443	0456	34886	2766			14764	627	107	113	003	149	010		
		STD	0500	0448	3489	2767	0004873	0302	14770	625							
		STD	0600	0433	3490	2769	0004729	0350	14780	623							
	201	OBS	T0662	0425	34905	2771			14787	621	111	118	000	164	010		
		STD	0700	0420	3491	2771	0004640	0397	14791	620							
		STD	0800	0407	3490	2772	0004599	0443	14803	618							
	201	OBS	T0879	0397	34902	2773			14812	616	107	117	001	164	011		
		STD	0900	0394	3490	2773	0004561	0489	14814	617							
		STD	1000	0383	3490	2775	0004520	0534	14826	623							
		STD	1100	0374	3490	2776	0004499	0579	14839	629							
	201	OBS	T1117	0373	34899	2776			14841	630	112	117	003	134	011		
		STD	1200	0367	3490	2776	0004522	0625	14853	629							
		STD	1300	0363	3490	2776	0004570	0670	14868	624							
	201	OBS	T1320	0362	34894	2776			14871	623	113	121	002	166	011		

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRIFT INCHES	MARDEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.						10"	1"	MO		DAY	HR./1/10			CRUISE NO.	STATION NUMBER	DIR.		HGT PER	SEA		TYPE
31	549	EV	6137 N	060383W	223	10	08	02	228	1965	LCE	9465	0538	05	13	3	X		X2	7	8	0057
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS						
						COLOR CODE	TRANS. INCH	DIR.	SPEED OF FORCE	METER (mbars)	DRY BULB	WET BULB										
									24	508	766	072						061	8	10		

MESSING TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta$ D DYN. M. $\times 10^2$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ol/l}$	TOTAL-P $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	Si O <sub>4</sub> -Si $\mu\text{g} - \text{ol/l}$	pH	S C C
	228	STD	0000	0523	3324	2628	0017530	0000	14696	707							
		OBS	0000	0523	33239	2628			14696	707							
		STD	0010	0333	3334	2655	0014903	0016	14619	743							
		STD	0020	0178	3342	2675	0013083	0030	14555	766							
	228	OBS	0026	0102	33464	2683			14522	774							
		STD	0030	0055	3347	2687	0011946	0043	14502	773							
		STD	0050	-0075	3355	2699	0010736	0065	14446	755							
	228	OBS	0052	-0079	33565	2700			14445	752							
		STD	0075	0021	3378	2713	0009400	0091	14498	700							
	228	OBS	0078	0031	33803	2715			14503	694							
		STD	0100	0081	3394	2723	0008519	0113	14532	662							
	228	OBS	0104	0097	33975	2725			14540	657							
		STD	0125	0297	3434	2738	0007118	0133	14636	637							
		STD	0150	0453	3463	2746	0006499	0150	14710	621							
	228	OBS	0155	0474	34668	2746			14721	619							
		STD	0200	0490	3474	2750	0006141	0181	14736	615							
	228	OBS	T0204	0491	34744	2750			14737	615							
		STD	0250	0500	3480	2754	0005866	0211	14749	612							
		STD	0300	0510	3484	2756	0005742	0240	14761	608							
	228	OBS	T0306	0511	34844	2756			14763	608							
		STD	0400	0481	3487	2762	0005297	0295	14767	610							
	228	OBS	T0409	0476	34871	2762			14766	610							
		STD	0500	0413	3483	2766	0004921	0346	14754	591							
	228	OBS	T0533	0383	34794	2766			14747	580							

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPTH INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT
31	549	EV	61372N	061164W	223	11	08	03	014	1965	LCE	9466		0576	06	24	3	2		X1	3	6	0058
						WATER		WIND		BARO- METER		AIR TEMP. °C		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. mm	DIR.	SPEED OF FORCE	DRY BULB		WET BULB		VIS. CODE									
									26	S10	122	061	050	8	11								
MESSAGE TIME HR. 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ σ DYN. M. x 10 <sup>3</sup>		SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH					
		STD	0000	0528	3326	2629	0017405		0000		14699	706											
014		OBS	0000	0528	33263	2629					14699	706	018	031	003	000	001						
		STD	0010	0516	3326	2630	0017314		0017		14695	717											
014		OBS	0010	0516	33259	2630					14695	717	039	076	000	000	001						
		STD	0020	0488	3328	2635	0016866		0034		14686	723											
014		OBS	0025	0460	33291	2639					14675	728	018	036	001	002	002						
		STD	0030	0390	3332	2648	0015589		0051		14647	737											
		STD	0050	0164	3345	2678	0012766		0079		14554	771											
014		OBS	0051	0155	33460	2679					14550	773	032	051	006	021	001						
		STD	0075	0001	3364	2703	0010367		0108		14487	735											
014		OBS	0076	-0001	33652	2704					14486	733	073	087	015	076	004						
		STD	0100	0055	3382	2715	0009278		0133		14518	698											
014		OBS	0102	0061	33832	2715					14521	695	085	096	021	103	006						
		STD	0125	0181	3407	2726	0008211		0154		14582	667											
		STD	0150	0288	3429	2735	0007432		0174		14636	644											
014		OBS	0152	0296	34304	2736					14640	642	092	099	016	132	008						
		STD	0200	0430	3460	2746	0006528		0209		14709	620											
014		OBS	T0203	0436	34612	2746					14712	619	094	102	000	142	008						
		STD	0250	0464	3474	2753	0005899		0240		14733	614											
		STD	0300	0493	3482	2756	0005692		0269		14754	609											
014		OBS	T0302	0494	34822	2756					14755	609	103	112	000	151	009						
		STD	0400	0433	3483	2764	0005068		0323		14746	587											
014		OBS	T0406	0431	34827	2764					14746	586											
		STD	0500	0428	3482	2764	0005130		0374		14760	576											
014		OBS	0568	0425	34821	2764					14770	576											

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPTH INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT
31	549	EV	61375N	061543W	223	11	08	03	040	1965	LCE	9467		0588	05	17	7	2		X1	0	2	0059
						WATER		WIND		BARO- METER		AIR TEMP. °C		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. mm	DIR.	SPEED OF FORCE	DRY BULB		WET BULB		VIS. CODE									
									25	S08	112	044	044	8	09								
MESSAGE TIME HR. 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ σ DYN. M. x 10 <sup>3</sup>		SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH					
		STD	0000	0368	3332	2650	0015377		0000		14632	745											
040		OBS	0000	0368	33318	2650					14632	745	030	049	004	010	002						
		STD	0010	0341	3335	2655	0014899		0015		14623	747											
		STD	0020	0306	3338	2661	0014359		0030		14610	748											
040		OBS	0025	0286	33398	2664					14602	749	038	054	006	020	003						
		STD	0030	0248	3351	2676	0012922		0043		14588	737											
		STD	0050	0158	3385	2711	0009676		0066		14557	700											
040		OBS	0050	0158	33852	2711					14557	700	071	083	027	070	006						
040		OBS	0074	0186	34018	2722					14575	679	080	088	029	090	006						
		STD	0075	0187	3402	2722	0008619		0089		14576	679											
		STD	0100	0221	3413	2728	0008053		0110		14596	665											
040		OBS	T0103	0225	34147	2729					14599	663	090	102	028	112	007						
		STD	0125	0325	3438	2739	0007071		0129		14649	641											
040		OBS	0148	0388	34545	2746					14682	627	097	110	001	132	008						
		STD	0150	0388	3455	2746	0006421		0145		14682	627											
040		OBS	T0198	0382	34599	2751					14688	625	099	103	001	144	009						
		STD	0200	0383	3460	2751	0006040		0177		14689	624											
		STD	0250	0403	3470	2757	0005543		0206		14707	613											
		STD	0300	0417	3477	2761	0005217		0232		14722	604											
040		OBS	T0386	0432	34837	2764					14743	595											
		STD	0400	0432	3483	2764	0004999		0284		14746	595											
		STD	0500	0428	3481	2763	0005206		0335		14760	597											
040		OBS	0517	0427	34810	2763					14763	597											



REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DATE MM/YY	MARDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER				
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT		PER	SEA		TYPE	AMT		
31	549	EV	61377N	062384W		223	12	08	03	070	1965	LCE	9468	0594	05	13	4	2		X1	3	1			0060
		WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS														
		COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB																	
							23 <td>S04</td> <td>125</td> <td>044</td> <td>039</td> <td>8</td> <td>11</td> <th colspan="11"></th> <th colspan="2"></th>	S04					125	044	039	8	11								
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> ?		Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PD <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SID <sub>4</sub> -Si μg - at/l	pH							
		STD	0000	0394	3331	2647	0015702		0000	14643	749														
070		OBS	0000	0394	33307	2647	0015702			14643	749	027	049	003	005	003									
		STD	0010	0394	3330	2647	0015747		0016	14645	754														
070		OBS	0010	0394	33302	2647	0015747			14645	754	030	049	004	005	003									
		STD	0020	0377	3331	2649	0015534		0031	14639	754														
070		OBS	0023	0368	33321	2651	0015534			14636	754	027	046	004	005	003									
		STD	0030	0331	3334	2656	0014898		0047	14622	752														
070		OBS	0045	0257	33403	2667	0014898			14593	745	034	045	004	014	003									
		STD	0050	0230	3345	2673	0013245		0075	14583	742														
070		OBS	0067	0163	33593	2690	0013245			14558	729	056	072	013	041	004									
		STD	0075	0147	3366	2696	0011063		0105	14553	721														
070		OBS	0090	0133	33782	2707	0011063			14551	706	069	090	020	064	005									
		STD	0100	0138	3387	2713	0009415		0131	14556	692														
		STD	0125	0179	3411	2730	0007894		0152	14582	663														
070		OBS	0134	0204	34192	2734	0007894			14595	655	091	102	034	105	008									
		STD	0150	0293	3439	2743	0006723		0171	14640	646														
070		OBS	T0179	0413	34650	2752	0006723			14699	632	093	101	000	130	007									
		STD	0200	0427	3468	2752	0005897		0202	14709	629														
		STD	0250	0449	3475	2756	0005663		0231	14727	621														
070		OBS	T0270	0452	34769	2757	0005663			14732	618	097	102	004	129	008									
		STD	0300	0444	3479	2759	0005362		0259	14734	612														
070		OBS	T0366	0429	34832	2764	0005362			14739	603														
		STD	0400	0424	3483	2765	0004930		0310	14742	600														
		STD	0500	0417	3483	2765	0004966		0360	14756	598														
070		OBS	T0504	0417	34830	2765	0004966			14757	598														

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INCHES	MARDEN SQUARE		STATION TIME IGMT			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER		SEA	TYPE		AMT
31	549					EV	6138 N	063176W	223	13		08	03			091	1965	LCE		9469	0531		05
		WATER		WIND		AIR TEMP. °C		BARO- METER (mb)		DRY BULB		WET BULB		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS					
		COLOR CODE		TRANS. (m)		DIR.		SPEED OR FORCE		DRY BULB		WET BULB		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS					
						22		S05		125		100		078		8		10					
MESSAGE TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> ?		Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SID <sub>4</sub> -Si μg - at/l	pH					
		STD	0000	0393	3330	2646		0015776		0000	14643	748											
091		OBS	0000	0393	33296	2646		0015776			14643	748	025	045	003	003	002						
		STD	0010	0307	3337	2660		0014453		0015	14609	746											
		STD	0020	0238	3346	2673		0013219		0029	14582	742											
091		OBS	0027	0199	33520	2681		0013219			14566	737	047	060	010	033	004						
		STD	0030	0185	3355	2684		0012149		0042	14561	734											
		STD	0050	0130	3374	2704		0010339		0064	14543	713											
091		OBS	0053	0127	33769	2706		0010339			14542	710	072	081	020	061	005						
		STD	0075	0151	3399	2722		0008588		0088	14559	684											
091		OBS	0080	0162	34034	2725		0008588			14566	679	084	091	032	095	006						
		STD	0100	0230	3422	2735		0007444		0108	14602	658											
091		OBS	0106	0250	34276	2737		0007444			14612	653	090	095	032	115	007						
		STD	0125	0328	3444	2743		0006647		0125	14651	640											
		STD	0150	0402	3459	2748		0006262		0142	14689	629											
091		OBS	0160	0422	34638	2750		0006262			14699	626	096	105	000	139	008						
		STD	0200	0438	3470	2753		0005865		0172	14713	627											
091		OBS	0213	0441	34721	2754		0005865			14717	627	098	105	001	144	008						
		STD	0250	0441	3476	2757		0005501		0200	14724	610											
		STD	0300	0441	3480	2760		0005254		0227	14733	594											
091		OBS	T0318	0441	34808	2761		0005254			14736	590	111	115	005	157	011						
		STD	0400	0440	3482	2762		0005193		0279	14749	590											
091		OBS	T0424	0439	34828	2763		0005193			14753	590											
		STD	0500	0440	3483	2763		0005224		0332	14765	591											
091		OBS	0531	0440	34836	2763		0005224			14771	591											

REFERENCE		SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DEPTH IN METERS	MARS DEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.						10°	1°	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT		PER	SEA		TYPE
31	549	EV	61374N	06355 W		223	13	08	03	118	1965	LCE	9470	0430	04	13	2	4		X1	2	2	0062
		WATER		WIND		BARO- METER (mba)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS												
		COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE		DRY BULB	WET BULB															
				21	S11		129	044				039	8	09									
MESSNGR TIME HR 1/10	CST NO.	CARD TYPE	DEPTH (m)	T °C	S %.	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ol/l}$	TOTAL-P $\mu\text{g} - \text{ol/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	Si O <sub>4</sub> -Si $\mu\text{g} - \text{ol/l}$	pH							
118		STD	0000	0411	3309	2628	0017507	0000	14648	733													
		OBS	0000	0411	33089	2628			14648	733													
		STD	0010	0404	3310	2630	0017359	0017	14646	737													
		STD	0020	0396	3314	2633	0016994	0035	14645	740													
118		OBS	0028	0390	33181	2637			14644	743													
		STD	0030	0353	3319	2642	0016226	0051	14629	741													
		STD	0050	0094	3338	2677	0012851	0080	14521	719													
118		OBS	0054	0065	33424	2682			14510	715													
		STD	0075	0065	3377	2710	0009716	0109	14518	697													
118		OBS	0080	0065	33822	2714			14519	693													
		STD	0100	0086	3389	2718	0008929	0132	14533	680													
118		OBS	0106	0100	33921	2720			14541	676													
		STD	0125	0227	3418	2732	0007734	0153	14604	656													
		STD	0150	0347	3442	2740	0006995	0171	14663	634													
118		OBS	0160	0380	34495	2743			14680	626													
		STD	0200	0405	3459	2748	0006340	0204	14698	602													
118		OBS	T0213	0410	34609	2749			14703	596													
		STD	0250	0410	3465	2752	0005991	0235	14709	588													
		STD	0300	0410	3469	2755	0005740	0265	14718	581													
118		OBS	T0318	0410	34698	2756			14721	579													
		STD	0400	0412	3473	2758	0005559	0321	14736	577													
118		OBS	T0422	0413	34730	2758			14740	577													

REFERENCE		SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DEPTH IN METERS	MARS DEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
							10°	1°	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE	
31	549	EV	61379N	064311W		223	14	08	03	140	1965	LCE	9471	0095	01	13	1	4		X1	0	4	0063
		WATER		WIND		BARO- METER (mba)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS												
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB															
						22	S11	119	028	022	8	05											
MESSNGR TIME HR 1/10	CST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>T</sub>	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ol/l	TOTAL-P μg - ol/l	NO <sub>3</sub> -N μg - ol/l	NO <sub>3</sub> -N μg - ol/l	Si O <sub>4</sub> -Si μg - ol/l	pH							
140		STD	0000	0184	3305	2644	0015958	0000	14549	756													
		OBS	0000	0184	33046	2644			14549	756	069	081	006	004	006								
		STD	0010	0110	3311	2654	0014999	0015	14518	748													
		STD	0020	0056	3316	2662	0014314	0030	14496	741													
140		OBS	0025	0036	33190	2665			14488	738	084	096	008	058	008								
		STD	0030	0029	3322	2668	0013716	0044	14486	735													
		STD	0050	0012	3329	2674	0013118	0071	14483	729													
140		OBS	0050	0012	33287	2674			14483	729	086	103	009	068	008								
140		OBS	0070	0014	33286	2674			14487	729	087	095	013	065	008								
		STD	0075	0013	3329	2674	0013094	0104	14488	729													
140		OBS	0080	0012	33290	2674			14488	729	087	097	009	064	008								

REFERENCE		SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DEPTH IN METERS	MARS DEN		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT	
31	549	EV	61492N	064329W		223	14	08	03	167	1965	LCE	9472	0274	02	21	2	2		X1	3	2	0064
						WATER		WIND		BARO- METER (mba)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
COLOR CODE		TRANS. (m)		DIR.	SPEED OF FORCE	DRY BULB	WET BULB																
					18	S12	102	089	067	8	07												
MESSNGR TIME HR 1/10	CST NO.	CARD TYPE	DEPTH (m)	T °C	S %.	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ol/l}$	TOTAL-P $\mu\text{g} - \text{ol/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	Si O <sub>4</sub> -Si $\mu\text{g} - \text{ol/l}$	pH	S C						
167		STD	0000	0201	3283	2626	0017700	0000	14553	763													
		OBS	0000	0201	32832	2626			14553	763													
		STD	0010	0175	3287	2631	0017235	0017	14544	762													
167		STD	0020	0150	3291	2636	0016768	0034	14535	761													
		OBS	0025	0138	32931	2638			14531	760													
		STD	0030	0132	3294	2639	0016426	0051	14529	758													
167		STD	0050	0086	3301	2648	0015618	0083	14513	751													
		OBS	0051	0083	33015	2648			14512	751													
		STD	0075	-0017	3318	2667	0013792	0120	14472	742													
167		OBS	0076	-0020	33194	2668			14471	741													
		STD	0100	-0085	3350	2695	0011059	0151	14449	716													
		OBS	0102	-0088	33519	2697			14449	714													
167		STD	0125	-0047	3366	2707	0009980	0177	14473	698													
		STD	0150	-0008	3377	2714	0009317	0201	14497	685													
		OBS	0152	-0005	33782	2715			14499	684													
167		STD	0200	0055	3390	2721	0008668	0246	14536	669													
		OBS	0203	0058	33903	2721			14538	668													

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH METER	MARSDEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	IO. NO.						10°	1°	MO		DAY	HR.1/10			CRUISE NO.	STATION NUMBER	DIR		HGT	PER		SEA
31	549	EV	6158 N	064308W	223	14	08	03	183	1965	LCE	9473	0293	02	19	0	2		X1	0	4	0065
							WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS						
COLOR CODE		TRANS. (m)		DIR.	SPEED OF FORCE		DRY BULB	WET BULB														
							18		512		112	058	044	8	06							
MESSNGR TIME HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S %.	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta \sigma$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ml/l}$	TOTAL-P $\mu\text{g} - \text{ml/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ml/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ml/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{ml/l}$	pH	CTD					
183	OBS	STD	0000	0222	3238	2588	0021308	0000	14556	809												
		OBS	0000	0222	32376	2588			14556	809	058	087	002	006	003							
		STD	0010	0209	3258	2605	0019670	0020	14555	786												
183	OBS	STD	0020	0197	3274	2619	0018374	0040	14554	767												
		OBS	0025	0191	32813	2625			14553	760	100	164	005	021	006							
		STD	0030	0185	3285	2628	0017458	0057	14552	755												
183	OBS	STD	0050	0161	3303	2644	0015970	0091	14547	740												
		OBS	0050	0161	33025	2644			14547	740	082	097	008	050	007							
		STD	0075	-0085	3328	2678	0012738	0127	14442	727												
183	OBS	STD	0075	-0085	33282	2678			14442	727	093	107	011	071	010							
		STD	0100	-0071	3347	2692	0011342	0157	14455	711												
		STD	0125	-0057	3361	2703	0010350	0184	14468	699												
183	OBS	STD	0125	-0057	33606	2703			14468	699	096	103	010	095	010							
		STD	0150	-0042	3368	2708	0009842	0209	14480	691												
		OBS	0175	-0027	33703	2709			14491	688	099	107	010	098	010							

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH METER	MARSDEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
							10°	1°	MO		DAY	HR.1/10			CRUISE NO.	STATION NUMBER	DIR		HGT	PER		SEA	TYPE
31	549	EV	6203 N	064294W	223	24	08	03	193	1965	LCE	9474	0293	03	17	0	2		X2	3	8		0066
							WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
COLOR CODE		TRANS. (m)		DIR.	SPEED OR FORCE	DRY BULB		WET BULB															
					16	510	105	083	061	8	08												
MESSNGR TIME HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ σ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	S CODE						
193	OBS	STD	0000	0204	3233	2586	0021507	0000	14548	817													
		OBS	0000	0204	32333	2586			14548	817	056	085	001	045	002								
		STD	0010	0113	3253	2608	0019430	0020	14512	803													
193	OBS	STD	0020	0036	3272	2627	0017567	0039	14481	787													
		OBS	0025	0003	32810	2636			14468	779	073	088	009		006								
		STD	0030	-0030	3292	2646	0015739	0056	14455	767													
193	OBS	STD	0049	-0105	33239	2675			14428	734	094	106	009	073	010								
		STD	0050	-0104	3325	2676	0012932	0084	14429	733													
		OBS	0073	-0088	33435	2690			14443	717	094	101	010	088	010								
193	OBS	STD	0075	-0087	3344	2691	0011522	0115	14443	716													
		OBS	0097	-0081	33517	2697			14451	709	097	110	012	036	010								
		STD	0100	-0080	3352	2697	0010925	0143	14452	708													
193	OBS	STD	0125	-0075	3355	2699	0010704	0170	14459	705													
		OBS	0146	-0069	33577	2701			14465	702	094	108	010	086	010								
		STD	0150	-0068	3358	2701	0010493	0196	14467	702													
193	OBS	STD	T0194	-0054	33616	2704			14481	698	091	113	010	093	009								
		STD	0200	-0052	3362	2704	0010238	0248	14483	698													
		STD	0250	-0038	3366	2706	0009982	0299	14498	695													
193	OBS	T0293	-0028	33700	2709				14511	695	096	098	016	099	010								

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH METER	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	IO. NO.					10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER		SEA	TYPE	
31	549	EV	62112N	064278W	223	24	08	03	209	1965	LCE	9475	0174	02	10	0	2		X1	3	6	0067
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
		COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	DRY BULB		WET BULB														
								15		508	098	094	078	8	07							
MESSNGR TIME OF HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> °		Σ Δ σ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY		O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	CTD		
209	OBS	STD	0000	0184	3250	2600		0020126		0000	14541		793	063	088	006	015	003				
		OBS	0000	0184	32497	2600						14541									793	
		STD	0010	0189	3256	2605		0019686		0020	14546		784									
209	OBS	STD	0020	0195	3262	2609		0019269		0039	14551		777	074	093	007	017	005				
		OBS	0024	0197	32652	2612						14553									775	
		STD	0030	0143	3269	2619		0018395		0058	14531		775									
209	OBS	STD	0047	0023	32841	2638					14481		768	081	096	007	037	006				
		STD	0050	0008	3289	2642		0016128		0093	14476		765									
		OBS	0070	-0062	33119	2664						14450									745	
209	OBS	STD	0075	-0065	3316	2667		0013746		0130	14450		740	088	098	011	072	008				
		OBS	0093	-0076	33260	2676						14449									727	
		STD	0100	-0080	3328	2677		0012760		0163	14449		727									
209	OBS	STD	0125	-0091	3332	2681		0012401		0195	14448		725	097	118	014	078	010				
		OBS	T0141	-0094	33331	2682						14450									724	
		STD	0150	-0093	3333	2682		0012296		0226	14451		728									
014	OBS	T0166	-0092	33332	2682						14455		738	095	104	012	074	010				

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH INCHES	MARSSEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.						10"	1"	MO		DAY	HR./10			CRUISE NO.	STATION NUMBER	DIR.	HGT		PER	SEA	
31	549	EV	62155N	064282W	223	24	08	03	218	1965	LCE	9476	0121	01	11	1	2		X1	3	4	0068
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS						
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mbars)	(mbars)	DRY BULB	WET BULB									
									11	S12	091	072	056	8	05							

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ol/l}$	TOTAL-P $\mu\text{g} - \text{ol/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{ol/l}$	pH	S CODE
218		STD	0000	0021	3235	2598	0020350	0000	14666	800							
		OBS	0000	0021	32347	2598			14666	800							
		STD	0010	0017	3242	2604	0019772	0020	14667	798							
		STD	0020	0014	3250	2611	0019141	0040	14668	796							
218		OBS	0025	0012	32545	2614			14668	795							
		STD	0030	-0016	3261	2621	0018167	0058	14657	784							
		STD	0050	-0084	3280	2639	0016460	0093	14432	754							
218		OBS	0050	-0084	32798	2639			14432	754							
		STD	0075	-0075	3292	2648	0015521	0133	14442	750							
218		OBS	0075	-0075	32923	2648			14442	750							
		STD	0100	-0076	3296	2652	0015214	0171	14446	749							
218		OBS	0100	-0076	32961	2652			14446	749							

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH INCHES	MARSSEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.						10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT
31	549	EV	63565N	063568W	223	33	08	04	106	1965	LCE	9477	0269	03	11	0	X		X1	3	7		0069	
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mb)	(mb)	DRY BULB	WET BULB											
									16	S10	068	036	033	8	09									

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ol/l}$	TOTAL-P $\mu\text{g} - \text{ol/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{ol/l}$	pH	S CODE
106		STD	0000	0281	3170	2530	0026840	0000	14573	818							
		OBS	0000	0281	31704	2530			14573	818	074	095	009	020	004		
		STD	0010	0224	3197	2555	0024434	0026	14553	814							
106		OBS	0010	0224	31966	2555			14553	814	096	103	016	046	007		
		STD	0020	0182	3204	2564	0023585	0050	14537	820							
106		OBS	0025	0156	32089	2570			14527	822	108	118	010	072	010		
		STD	0030	0112	3219	2580	0022010	0072	14510	821							
		STD	0050	-0029	3255	2617	0018563	0113	14454	814							
106		OBS	0051	-0035	32567	2618			14451	814	107	117	008	089	012		
		STD	0075	-0132	3290	2648	0015514	0156	14415	769							
106		OBS	0076	-0134	32911	2649			14414	767	098	107	009	109	011		
		STD	0100	-0154	3307	2663	0014133	0193	14411	730							
106		OBS	0102	-0155	33082	2664			14411	728	105	116	011	088	012		
		STD	0125	-0134	3319	2672	0013252	0227	14426	707							
		STD	0150	-0120	3328	2679	0012592	0259	14438	694							
106		OBS	0152	-0119	33290	2680			14439	693							
		STD	0200	-0120	3342	2690	0011493	0319	14448	695							
106		OBS	T0203	-0120	33430	2691			14449	695							
		STD	0250	-0112	3348	2695	0011035	0376	14461	687							
106		OBS	T0254	-0111	33481	2695			14462	686							

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH INCHES	MARSEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT	
31	549	EV	63547N	063123W	223	33	08	04	132	1965	LCE	9478	0333	03	18	2	2		X1	3	7		0070
						WATER		WIND		BARO- METER (mba)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB											
									16	S12	068	061	056	8	09								

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ol/l}$	TOTAL-P $\mu\text{g} - \text{ol/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{ol/l}$	pH	S CODE
132		STD	0000	0490	3255	2577	0022330	0000	14673	725							
		OBS	0000	0490	32553	2577			14673	725	061	081	001	000	003		
		STD	0010	0381	3265	2596	0020540	0021	14631	762							
		STD	0020	0268	3276	2615	0018750	0041	14585	786							
132		OBS	0025	0211	32808	2623			14562	793	066	098	003	002	004		
		STD	0030	0132	3287	2634	0016958	0059	14528	791							
		STD	0050	-0089	3309	2662	0014230	0090	14433	781							
132		OBS	0050	-0089	33087	2662			14433	781	081	098	014	038	006		
		STD	0075	-0154	3328	2679	0012570	0124	14410	731							
132		OBS	0075	-0154	33276	2679			14410	731	088	101	015	075	009		
		STD	0100	-0168	3340	2690	0011535	0154	14409	719							
132		OBS	0100	-0168	33404	2690			14409	719	097	112	012	075	010		
		STD	0125	-0169	3344	2693	0011239	0182	14413	738							
		STD	0150	-0169	3349	2697	0010875	0210	14418	743							
132		OBS	0150	-0169	33485	2697			14418	743	089	102	014	086	008		
		STD	0200	-0131	3358	2704	0010216	0263	14446	715							
132		OBS	T0200	-0131	33582	2704			14446	715	095	135	014	088	009		
		STD	0250	-0020	3380	2717	0009006	0311	14508	667							
		STD	0300	0034	3391	2723	0008470	0354	14543	641							
132		OBS	T0300	0034	33909	2723			14543	641	102		004	114	014		
132		OBS	T0325	0040	33923	2724			14550	636	119	143	003	120	015		



REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH IN METERS	MARS DEN SQUARE	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER				
CTRY CODE	ID. NO.						MO	DAY		HR. 1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT PER SEA		TYPE	AMT					
31	549	EV	63547N	062255W	223	32	08	04	154	1965	LCE 9479	0194	02	13	2	3		X2	6	8		0071		
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS						
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mb)	DRY BULB	WET BULB												
									13	509	075	061	056	8	07									
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S %.	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ σ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>3</sub> -N μg - dl/l	NO <sub>3</sub> -N μg - dl/l	SiO <sub>4</sub> -Si μg - dl/l	pH	S.C.C.						
154		STD	0000	0495	3232	2558	0024156		0000	14672	723													
		OBS	0000	0495	32317	2558				14672	723													
		STD	0010	0348	3257	2593	0020847		0023	14615	772													
		STD	0020	0210	3277	2620	0018238		0042	14560	798													
154	OBS	0025	0144	32852	2631					14532	801	056	076	004	005	004								
	STD	0030	0062	3291	2641	0016249		0059	14497	782														
154	STD	0050	-0150	3308	2663	0014103		0090	14405	727														
	OBS	0050	-0150	33080	2663				14405	727	110	121	018	072	011									
154	STD	0075	-0158	3321	2674	0013082		0124	14407	711														
	OBS	0075	-0158	33208	2674				14407	711	108	115	007	077	011									
154	STD	0100	-0155	3347	2695	0011063		0154	14416	706														
	OBS	0100	-0155	33470	2695				14416	706	103	112	007	084	011									
154	STD	0125	-0161	3348	2696	0010991		0181	14417	719														
	STD	0150	-0164	3348	2696	0010935		0209	14420	726														
154	OBS	T0150	-0164	33479	2696				14420	726	097	113	012	086	009									
154	OBS	T0180	-0164	33468	2695				14425	727	085	095	011	089	009									

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	INSTRUMENT NO.	MARSDEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER					
CTRY CODE	ID. NO.						10"	1"	MO		DAY	HR.1/10			CRUISE NO.	STATION NUMBER	DIR.			HGT		PER	SEA	TYPE	AMT	
31	549	EV	63547N	061452W	223	31	08	04	179	1965	LCE 9480		0218	02	10	2	3		X6	5	8		0072			
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB		WET BULB														
								12	507	064	072	064	8	07												
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ σ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>3</sub> -N μg - dl/l	NO <sub>3</sub> -N μg - dl/l	SiO <sub>4</sub> -Si μg - dl/l	pH	S.C.C.							
		STD	0000	0462	3249	2575	0022487		0000	14661	733															
	179	OBS	0000	0462	32494	2575				14661	733		055	078	001	000	003									
		STD	0010	0431	3250	2579	0022143		0022	14650	753															
		STD	0020	0359	3254	2589	0021176		0044	14621	768															
	179	OBS	0025	0307	32571	2597				14600	774					005	000	005								
		STD	0030	0196	3265	2612	0019051		0064	14554	782															
		STD	0050	-0105	3289	2647	0015672		0099	14423	787															
	179	OBS	0050	-0105	32892	2647				14423	787	082	082	018	035	005										
		STD	0075	-0156	3308	2663	0014107		0136	14406	729															
	179	OBS	0075	-0156	33075	2663				14406	729	107	122	015	119	009										
		STD	0100	-0155	3324	2676	0012857		0170	14413	706															
	179	OBS	0100	-0155	33236	2676				14413	706	100	109	008	081	011										
		STD	0125	-0159	3335	2685	0011956		0201	14417	707															
		STD	0150	-0162	3343	2692	0011285		0230	14421	707															
	179	OBS	0150	-0162	33434	2692				14421	707	095	107	006	085	010										
		STD	0200	-0125	3355	2701	0010474		0284	14448	700															
	179	OBS	0200	-0125	33551	2701				14448	700	100	110	008	100	011										

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	INSTRUMENT NO.	MARSDEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODE		NODC STATION NUMBER			
CTRY CODE	ID. NO.						10"	1"	MO	DAY		HR.	T/10			CRUISE NO.	STATION NUMBER	DIR.		HGT	PER		SEA	TYPE	AMT
31	549	EV	63545N	061005W		223	31	08	04	207	1965	LCE 9481		0256	02	13	2	3		X6	5	8		0073	
							WATER		WIND		BARO- METER (mba)	AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
							COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB												
										10	508	054	067	061	8	09									
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$		$\Sigma \Delta \sigma$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{dl/l}$	TOTAL-P $\mu\text{g} - \text{dl/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{dl/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{dl/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{dl/l}$	pH								
207		STD	0000	0517	3238	2560	0023922		0000	14682	725														
		OBS	0000	0517	32379	2560				14682	725														
		STD	0010	0498	3242	2566	0023431		0024	14677	724														
207		STD	0020	0479	3246	2571	0022951		0047	14671	723														
		OBS	0025	0470	32478	2573				14668	723	062	084	003	000	004									
		STD	0030	0309	3262	2600	0020145		0068	14603	732														
207		OBS	0049	-0095	33042	2659				14430	746	044	104	024	053	008									
		STD	0050	-0097	3305	2659	0014487		0103	14429	745														
		OBS	0073	-0133	33260	2678				14419	723	100	110	010	070	011									
207		STD	0075	-0136	3327	2678	0012666		0137	14418	721														
		OBS	0096	-0162	33350	2686				14410	705	099	110	001	088	012									
		STD	0100	-0161	3336	2686	0011891		0168	14412	705														
207		STD	0125	-0153	3346	2694	0011128		0196	14421	708														
		OBS	T0145	-0147	33546	2701				14428	710	087	103	005	096	009									
		STD	0150	-0136	3357	2703	0010321		0223	14435	704														
207		OBS	T0190	-0050	33776	2716				14484	663	095	101	002	110	011									
		STD	0200	-0020	3383	2719	0008790		0271	14501	657														
		OBS	0225	0027	33911	2724				14527	641	107	110	004	122	014									
207		STD	0250	0037	3392	2723	0008446		0314	14536	622														
		OBS	0250	0037	33915	2723				14536	622	101	115	005	119	014									

REFERENCE		SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDIC	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
CTRY CODE	ID. NO.					10°	1°	MO	DAY		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT	
31	549	EV	63542N	060157W		223	30	08	04	236	1965	LCE 9482	0439	04	08	1	2		X6	5	8		0074
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. m	DIR.	SPEED OR FORCE	(mbs)	DRY BULB	WET BULB											
									06	509	034	058	056					7	10				
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$		$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH						
236	OBS	STD	0000	0510	3229	2554	0024494		0000	14678	738												
		OBS	0000	0510	32293	2554				14678	738												
236	OBS	STD	0010	0442	3233	2565	0023500		0024	14652	743												
		OBS	0010	0442	32334	2565				14652	743												
236	OBS	STD	0020	0323	3243	2584	0021694		0047	14604	789												
		OBS	0026	0245	32509	2597				14573	803												
236	OBS	STD	0030	0160	3263	2613	0018960		0067	14537	791												
		STD	0050	-0130	3307	2662	0014233		0100	14414	744												
236	OBS	STD	0052	-0147	33101	2665				14407	740												
		STD	0075	-0161	3327	2679	0012598		0134	14406	708												
236	OBS	STD	0078	-0162	33292	2681				14407	706												
		STD	0100	-0171	3338	2688	0011711		0164	14407	712												
236	OBS	STD	0104	-0172	33392	2689				14408	713												
		STD	0125	-0168	3343	2692	0011317		0193	14413	720												
236	OBS	STD	0150	-0153	3349	2697	0010882		0221	14426	729												
		STD	0155	-0148	33507	2698				14429	731												
236	OBS	STD	0200	-0086	3368	2710	0009635		0272	14468	669												
		OBS	T0206	-0075	33709	2712				14474	663												
236	OBS	STD	0250	0083	3405	2731	0007707		0315	14559	660												
		STD	0300	0207	3434	2746	0006444		0351	14626	657												
236	OBS	STD	T0307	0220	34370	2747				14633	657												
		STD	0400	0267	3455	2758	0005434		Q410	14672	657												
236	OBS	0414	0274	34578	2759					14678	657												

REFERENCE		SHIP CODE	LATITUDE ° ' 1/10	LONGITUDE ° ' 1/10	DRIFT INDIC	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER				
CTRY CODE	ID. NO.					10°	1°	MO	DAY		HR. 1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT		PER	SEA		TYPE	AMT		
31	549	EV	63539N	059289W		222	39	08	05	022	1965	LCE 9483	0615	05	10	1	2		X2	5	8	0075			
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. m	DIR.	SPEED OR FORCE	(mbs)	DRY BULB	WET BULB													
								11	508	007	067	067	6	11											
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$		$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH							
022	OBS	STD	0000	0540	3240	2560		0023982		0000	14692	711													
		OBS	0000	0540	32404	2560					14692	711													
022	OBS	STD	0010	0452	3248	2575		0022538		0023	14658	733													
		OBS	0010	0452	32475	2575					14658	733													
022	OBS	STD	0020	0255	3297	2633		0017059		0043	14582	790													
		OBS	0025	0170	33140	2653					14548	803													
022	OBS	STD	0030	0089	3317	2660		0014419		0059	14513	778													
		STD	0050	-0127	3327	2678		0012708		0086	14418	715													
022	OBS	STD	0051	-0133	33280	2679					14416	713													
		STD	0075	-0149	3342	2691		0011478		0116	14414	715													
022	OBS	STD	0076	-0150	33429	2692					14414	715													
		STD	0100	-0152	3350	2697		0010842		0144	14418	722													
022	OBS	STD	0102	-0152	33508	2698					14418	722													
		STD	0125	-0101	3363	2706		0009994		0170	14448	720													
022	OBS	STD	0150	-0035	3378	2716		0009111		0194	14485	702													
		OBS	0152	-0029	33795	2717					14488	700													
022	OBS	STD	0200	0136	3411	2733		0007604		0236	14575	611													
		OBS	0203	0146	34133	2734					14580	607													
022	OBS	STD	0250	0325	3446	2745		0006561		0271	14671	603													
		STD	0300	0446	3469	2751		0006131		0303	14733	599													
022	OBS	STD	T0307	0457	34717	2752					14739	598													
		STD	0400	0469	3483	2759		0005488		0361	14761	588													
022	OBS	STD	T0403	0469	34828	2760					14762	587													
		STD	0500	0366	3475	2764		0005005		0413	14733	565													
022	OBS	T0509	0351	34738	2765						14728	562													

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT DIRECTION	MARS SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CITY CODE	ID. NO.					10°	1°	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DIR	WGT	PER	SEA		TYPE	AMT	
31	549	EV	63538N	058442W		222	38	08	05	052	1965	LCE	9484	0768	07	13	4	2		X6	5	8	0076
			WATER		WIND			BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
			COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	DRY BULB	WET BULB															
						16	S20	003	078	078	6	11											
MESSNGR TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S C/C					
052		STD	0000	0654	3325	2612	0018991		0000	14749	683												
		OBS	0000	0654	33248	2612				14749	683												
		STD	0010	0590	3326	2621	0018142		0019	14725	732												
		STD	0020	0508	3331	2635	0016855		0036	14694	760												
052		OBS	0025	0460	33346	2643				14676	767												
		STD	0030	0369	3342	2658	0014638		0052	14639	757												
052		STD	0050	0141	3367	2697	0010942		0077	14547	723												
		OBS	0051	0135	33679	2698				14544	722												
052		STD	0075	0162	3389	2713	0009422		0103	14563	696												
		OBS	0076	0164	33898	2714				14564	695												
052		STD	0100	0248	3410	2723	0008496		0125	14608	674												
		OBS	0102	0255	34118	2724				14611	673												
052		STD	0125	0328	3431	2733	0007625		0145	14649	663												
		STD	0150	0387	3448	2741	0006936		0164	14681	653												
052		OBS	0152	0391	34487	2741				14683	652												
		STD	0200	0439	3468	2751	0006026		0196	14714	667												
052		OBS	0203	0442	34686	2751				14715	668												
		STD	0250	0480	3479	2755	0005711		0225	14740	642												
052		STD	0300	0504	3487	2759	0005450		0253	14760	625												
		OBS	0305	0505	34874	2759				14761	624												
052		STD	0400	0495	3489	2762	0005313		0307	14773	625												
		OBS	0405	0494	34891	2762				14773	625												
052		STD	0500	0476	3490	2764	0005166		0359	14781	624												
		STD	0600	0457	3490	2767	0005015		0410	14790	623												
052		OBS	T0607	0456	34900	2767				14791	623												
		STD	0700	0299	3470	2767	0004829		0460	14737	546												
052		OBS	T0725	0242	34631	2766				14716	517												

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INCHES	MARS SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODE		NODC STATION NUMBER		
CITY CODE	ID. NO.					10°	1°	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE		AMT	
31	549	EV	63536N	058000W		222	38	08	05	085	1965	LCE	9485	1130	10	13	5	2		X6	7	8	0077	
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB												
									16	S20	997	083	083	6	13									
MESSNGR TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S %	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ D DYN. M. x 10 <sup>3</sup>		SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH						
085	STD	0000	0688	3334	2615	0018731	0000	14764	684															
	OBS	0000	0688	33340	2615			14764	684															
	STD	0010	0694	3337	2617	0018571	0019	14769	685															
	STD	0020	0700	3341	2619	0018404	0037	14773	686															
085	OBS	0021	0701	33412	2619			14774	686															
	STD	0030	0545	3368	2660	0014502	0054	14716	743															
085	OBS	0042	0404	33946	2697			14663	767															
	STD	0050	0367	3406	2709	0009814	0078	14650	722															
085	OBS	0061	0340	34185	2722			14642	681															
	STD	0075	0354	3429	2729	0007980	0100	14652	674															
085	OBS	0081	0361	34338	2732			14657	670															
	STD	0100	0391	3446	2739	0007081	0119	14674	653															
085	OBS	0123	0421	34579	2745			14692	638															
	STD	0125	0423	3459	2746	0006455	0136	14693	638															
085	STD	0150	0447	3467	2750	0006135	0152	14709	632															
	OBS	0165	0460	34712	2751			14717	630															
085	STD	0200	0475	3477	2754	0005748	0181	14730	631															
	STD	0250	0492	3483	2757	0005550	0210	14746	632															
085	STD	0300	0503	3488	2760	0005364	0237	14759	632															
	OBS	T0334	0507	34907	2761			14767	633															
085	STD	0400	0498	3491	2763	0005200	0290	14774	633															
	STD	0500	0484	3491	2764	0005149	0341	14785	633															
085	OBS	0516	0482	34914	2765			14787	633															
	STD	0600	0470	3490	2765	0005147	0393	14796	631															
085	STD	0700	0456	3489	2766	0005183	0445	14806	629															
	OBS	0701	0456	34890	2766			14806	629															
085	STD	0800	0435	3490	2769	0004956	0495	14814	624															
	OBS	T0868	0427																					
085	STD	0900	0427	3491	2771	0004885	0544	14828	616															
	OBS	T0913	0424	34914	2771			14829	615															
085	STD	1000	0350	3492	2779	0004013	0589	14812																
	OBS	1000	0350	34916	2779			14812																

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	MARS DEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1'	MO DAY HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	549	EV	64255N	057500W	222	47	08	05 138	1965	LCE	9486	0870	08	17	7	3		X2	7	8		0078
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS								
		COLOR CODE	TRANS. mm	DIR.	SPEED OR FORCE	DRY BULB	WET BULB															
					15	520	980	089		078		6		12								
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub> ?	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S C C					
		STD	0000	0689	3315	2600	0020185	0000	14762	674												
138		OBS	0000	0689	33147	2600			14762	674												
		STD	0010	0688	3315	2600	0020191	0020	14763	678												
138		OBS	0016	0688	33147	2600			14764	680												
		STD	0020	0547	3321	2623	0018035	0039	14709	719												
138		OBS	0027	0339	33314	2653			14624	770												
		STD	0030	0270	3333	2660	0014459	0056	14595	769												
		STD	0050	-0000	3351	2693	0011359	0081	14481	762												
138		OBS	0053	-0013	33540	2696			14475	761												
138		OBS	0069	0042	33743	2709			14506	696												
		STD	0075	0096	3384	2714	0009368	0107	14533	687												
138		OBS	0080	0133	33914	2717			14551	681												
		STD	0100	0189	3406	2725	0008338	0129	14581	661												
138		OBS	0106	0206	34103	2727			14590	657												
		STD	0125	0271	3419	2729	0008023	0150	14623	655												
		STD	0150	0345	3430	2731	0007878	0170	14661	651												
138		OBS	0160	0371	34337	2731			14674	649												
		STD	0200	0423	3453	2741	0006978	0207	14705	637												
		STD	0250	0472	3472	2751	0006144	0240	14736	622												
		STD	0300	0504	3485	2757	0005599	0269	14759	607												
138		OBS	T0319	0512	34878	2759			14766	601												
		STD	0400	0512	3490	2760	0005442	0324	14780	626												
138		OBS	T0420	0511	34904	2761			14783	630												
		STD	0500	0500	3490	2762	0005416	0379	14791	629												
		STD	0600	0476	3489	2764	0005313	0432	14798	627												
138		OBS	T0633	0465	34885	2765			14799	626												
		STD	0700	0439	3487	2766	0005125	0484	14799	615												
		STD	0800	0390	3485	2770	0004793	0534	14795	590												
138		OBS	T0844	0365	34834	2771			14791	576												

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DRAFT INCHES	MARS DEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER			
CTRY CODE	ID. NO.					10"	1'	MO DAY HR.1/10	CRUISE NO.	STATION NUMBER		DIR.	HGT			PER	SEA	TYPE	AMT							
31	549	EV	64395N	057480W		222	47	08	05	158	1965	LCE	9487	0753	06	17	5	2		X6	7	8	0079			
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS.	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
						COLOR CODE	TRANS. mm	DIR.	SPEED OR FORCE		DRY BULB	WET BULB														
								17	S12	970		078	078	6	12											
MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH										
158		STD	0000	0678	3316	2602	0019941	0000	14758	669																
		OBS	0000	0678	33161	2602			14758	669																
		STD	0010	0673	3317	2603	0019859	0020	14757	675																
		STD	0020	0668	3317	2604	0019777	0040	14757	682																
158		OBS	0025	0665	33171	2605			14757	685																
		STD	0030	0547	3323	2624	0017896	0059	14711	736																
		STD	0050	0165	3344	2677	0012864	0089	14554	808																
158		OBS	0050	0165	33438	2677			14554	808																
158		OBS	0065	-0028	33559	2698			14471	721																
		STD	0075	0023	3366	2704	0010325	0118	14497	700																
158		OBS	0075	0023	33660	2704			14497	700																
158		OBS	0099	0085	33865	2716			14532	675																
		STD	0100	0090	3388	2717	0009029	0142	14535	674																
		STD	0125	0197	3411	2728	0008029	0164	14590	653																
158		OBS	0147	0280	34294	2736			14632	637																
		STD	0150	0291	3432	2737	0007232	0183	14638	635																
	158		OBS	T0198	0435	34606	2746			14711	611															
		STD	0200	0439	3462	2746	0006475	0217	14713	611																
158		OBS	T0244	0515	34798	2752			14754	602																
		STD	0250	0514	3480	2752	0006029	0248	14754	601																
		STD	0300	0507	3482	2755	0005858	0278	14760	595																
158		OBS	T0369	0497	34853	2758			14768	592																
		STD	0400	0493	3486	2760	0005494	0335	14772	594																
		STD	0500	0481	3490	2764	0005212	0388	14784	602																
158		OBS	T0526	0478	34906	2765			14787	604																
		STD	0600	0410	3488	2770	0004605	0438	14770	592																
	158		OBS	0600	0410	34881	2770			14770	592															



REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDIC	MARSOEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT	
31	549	EV	64550N	057450W	222	47	08	05	179	1965	LCE	9488	0713	07	15	6	2		X6	7	8	0080		
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. mm	DIR.	SPEED OF FORCE	DRY BULB	WET BULB	°C												
								16	518	956	078	078	7	12										

MESSNGR TIME OF HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S %	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu g - at/l$	TOTAL-P $\mu g - at/l$	NO <sub>2</sub> -N $\mu g - at/l$	NO <sub>3</sub> -N $\mu g - at/l$	SiO <sub>4</sub> -Si $\mu g - at/l$	pH	S C
179	STD	0000	0664	3322	2609	0019324	0000	14753	673								
	OBS	0000	0664	33220	2609			14753	673								
	STD	0010	0659	3322	2610	0019255	0019	14752	675								
	STD	0020	0653	3322	2611	0019186	0039	14752	677								
179	OBS	0026	0650	33225	2611			14752	678								
	STD	0030	0484	3327	2635	0016908	0057	14685	683								
	STD	0050	-0074	3346	2692	0011428	0085	14446	708								
179	OBS	0051	-0090	33465	2693			14438	709								
	STD	0075	-0107	3356	2701	0010536	0112	14436	689								
179	OBS	0077	-0108	33580	2703			14436	688								
	STD	0100	0141	3387	2713	0009435	0137	14558	676								
179	OBS	0102	0157	33888	2714			14565	675								
	STD	0125	0191	3404	2723	0008513	0160	14586	661								
	STD	0150	0246	3420	2732	0007750	0180	14617	646								
179	OBS	0152	0251	34217	2733			14619	645								
	STD	0200	0413	3454	2743	0006798	0216	14701	618								
179	OBS	T0203	0420	34558	2744			14704	617								
	STD	0250	0486	3473	2750	0006228	0249	14742	603								
179	OBS	0281	0500	34789	2753			14754	599								
	STD	0300	0496	3480	2754	0005878	0279	14755	598								
179	OBS	T0306	0495	34806	2755			14756	598								
	STD	0400	0495	3487	2760	0005462	0336	14772	600								
179	OBS	0408	0495	34873	2760			14774	600								
	STD	0500	0415	3480	2763	0005167	0389	14755	582								
	STD	0600	0303	3470	2766	0004801	0439	14723	562								
179	OBS	T0610	0290	34688	2767			14718	560								
179	OBS	T0680	0193	34602	2768			14687	477								

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INDIC	MARSO SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT	
31	549	EV	65100N	057420W	222	57	08	05	202	1965	LCE	9489	0680	06	15	5	2		X6	5	8	0081		
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. mm	DIR.	SPEED OF FORCE	DRY BULB	WET BULB	°C												
								15	518	956	072	072	6	11										

MESSNGR TIME OF HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S %	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu g - at/l$	TOTAL-P $\mu g - at/l$	NO <sub>2</sub> -N $\mu g - at/l$	NO <sub>3</sub> -N $\mu g - at/l$	SiO <sub>4</sub> -Si $\mu g - at/l$	pH	S C
202	STD	0000	0405	3168	2517	0028078	0000	14626	730								
	OBS	0000	0405	31679	2517			14626	730								
	STD	0010	0304	3258	2598	0020398	0024	14597	757								
	STD	0020	0193	3317	2653	0015084	0042	14558	783								
202	OBS	0021	0181	33210	2658			14553	786								
	STD	0030	0040	3328	2672	0013314	0056	14492	754								
202	OBS	0042	-0089	33352	2684			14436	724								
	STD	0050	-0124	3338	2687	0011873	0081	14421	715								
202	OBS	0063	-0154	33426	2692			14410	709								
	STD	0075	-0147	3347	2695	0011101	0110	14416	718								
202	OBS	0084	-0133	33513	2698			14424	719								
	STD	0100	-0091	3353	2698	0010807	0137	14447	697								
	STD	0125	0016	3371	2708	0009939	0163	14503	666								
202	OBS	0125	0016	33705	2708			14503	666								
	STD	0150	0215	3417	2732	0007726	0185	14603	636								
202	OBS	T0168	0316	34418	2743			14653	618								
	STD	0200	0311	3443	2744	0006619	0221	14656	604								
	STD	0250	0303	3445	2746	0006438	0254	14661	582								
202	OBS	0257	0302	34452	2747			14662	579								
	STD	0300	0392	3463	2752	0005998	0285	14710	603								
202	OBS	T0348	0456	34764	2756			14746	618								
	STD	0400	0418	3474	2759	0005518	0343	14739	615								
	STD	0500	0344	3471	2763	0005105	0396	14724	582								
202	OBS	T0544	0312	34689	2765			14717	557								
	STD	0600	0137	3452	2766	0004609	0444	14648	515								
202	OBS	T0600	0137	34522	2766			14648	515								

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRAFT M	MARS DEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER		
CTRY CODE	ID. NO.					10'	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT		PER	SEA		TYPE	AMT
31	549	EV	65250N	057390W	222	57	08	05	222	1965	LCE	9490	0622	06	15	7	3		X6	5	8		0082
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	DRY BULB	WET BULB												
									16	517	953	078	072	6	12								
MESSAGE TIME HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$		$\Sigma \Delta$ D DYN. M. $\times 10^3$		SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} \cdot \text{at/l}$	TOTAL-P $\mu\text{g} \cdot \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} \cdot \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} \cdot \text{at/l}$	pH	S C				
222	085	STD	0000	0385	3151	2505	0029195		0000		14615	736											
		OBS	0000	0385	31507	2505					14615	736											
		STD	0010	0194	3233	2586	0021463		0025		14545	756											
222	085	STD	0020	0053	3292	2642	0016127		0044		14492	777											
		OBS	0025	0002	33141	2663					14472	787											
		STD	0030	-0010	3321	2669	0013608		0059		14468	764											
222	085	STD	0049	-0066	33412	2688					14449	712											
		STD	0050	-0072	3342	2688	0011780		0084		14446	713											
		OBS	0073	-0157	33480	2696					14411	722											
222	085	STD	0075	-0156	3349	2697	0010923		0113		14412	722											
		OBS	0097	-0133	33569	2703					14427	720											
		STD	0100	-0126	3358	2703	0010306		0139		14431	714											
222	085	STD	0125	-0068	3372	2713	0009434		0164		14464	670											
		OBS	0146	-0016	33831	2719					14494	642											
		STD	0150	-0005	3385	2720	0008723		0187		14499	639											
222	085	STD	0196	0120	34117	2734					14567	605											
		STD	0200	0135	3414	2735	0007370		0227		14575	603											
		OBS	T0244	0254	34372	2745					14638	581											
222	085	STD	0250	0257	3438	2745	0006540		0262		14640	577											
		OBS	T0294	0277	34467	2750					14657	560											
		STD	0300	0287	3449	2751	0006015		0293		14663	561											
222	085	STD	0348	0360	34646	2757					14704	566											
		OBS	T0398	0425	34782	2761					14742	597											
		STD	0400	0422	3478	2761	0005300		0350		14741	596											
222	085	STD	0500	0254	3462	2764	0004866		0400		14684	541											
		OBS	0573	0132	34503	2765					14641	501											

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DRIFT INCHES	MARS DEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER	
CTRY CODE	ID. NO.					10'	1"	MO	DAY	HR.1/10		CRUISE NO.	STATION NUMBER			DR.					TYPE	AMT		
																HGT	PER	SEA						
31	549	EV	65410N	057430W	222	57	08	06	007	1965	LCE	9491	0587	05	14	4	2		X4	7	8		0083	
						WATER		WIND		8ARD- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS									
						COLOR CODE	TRANS. mm	DIR.	SPEED OR FORCE		DRY BULB	WET BULB												
									16	518	949	067	061	5	11									
MESSNGR TIME HR 1/10	CAS ND.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta$ D DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} \cdot \text{at/l}$	TOTAL-P $\mu\text{g} \cdot \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} \cdot \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} \cdot \text{at/l}$	pH	S C							
007		STD	0000	0266	3097	2472	0032321	0000	14557	766														
		OBS	0000	0266	30966	2472			14557	766														
		STD	0010	0095	3205	2570	0022984	0028	14497	765														
007		STD	0020	-0031	3285	2641	0016274	0047	14452	763														
		OBS	0027	-0093	33238	2675			14430	762														
		STD	0030	-0100	3327	2677	0012803	0062	14428	753														
007		STD	0050	-0127	3343	2691	0011481	0086	14420	706														
		OBS	0053	-0129	33452	2693			14420	700														
		STD	0075	-0119	3359	2704	0010265	0113	14431	674														
007		OBS	0080	-0114	33625	2706			14434	669														
		STD	0100	-0083	3373	2714	0009308	0138	14453	648														
		OBS	0106	-0068	33768	2716			14462	643														
007		STD	0125	0052	3394	2724	0008348	0160	14523	643														
		STD	0150	0158	3411	2731	0007749	0180	14577	634														
		OBS	0160	0184	34163	2734			14591	627														
007		STD	0200	0170	3426	2742	0006721	0216	14592	574														
		OBS	0213	0166	34302	2746			14593	565														
		OBS	0245	0219	34410	2751			14623	562														
007		STD	0250	0230	3443	2751	0005934	0248	14629	563														
		STD	0300	0306	3457	2756	0005591	0277	14672	568														
		OBS	T0319	0319	34606	2757			14682	570														
007		STD	0400	0248	3457	2761	0005119	0330	14664	548														
		OBS	T0425	0227	34560	2762			14659	535														
		STD	0500	0167	3452	2763	0004839	0380	14644	477														
007		OBS	T0526	0147	34504	2764			14640	451														

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	OUT BOAT	MARSSEN SQUARE		STATION TIME IGMT				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10°	1°	MO	DAY	HR./10	CRUISE NO.		STATION NUMBER	DIR.				TYPE	AMT						
														WATER			WIND			BARO- METER (mb)		AIR TEMP. °C			VIS. CODE
		COLOR CODE	TRANS. UNIT	DIR.	SPEED OR FORCE			DRY BULB	WET BULB																
31	549	EV	66110N	057490W	222	67	08	06	042	1965	LCE	9492	0554	05	14	4	0		X2	7	8	0084			
									21	S18	942	050	044	7	13										
MESSAGE TIME OF HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Delta \rho$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{dl/l}$	TOTAL-P $\mu\text{g} - \text{dl/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{dl/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{dl/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{dl/l}$	pH	S C C								
		STD	0000	0261	3086	2464	0033074	0000	14553	757															
042		OBS	0000	0261	30862	2464			14553	757															
042		OBS	0007	0258	30858	2464			14553	757															
		STD	0010	0169	3125	2502	0029507	0031	14519	758															
		STD	0020	-0063	3231	2599	0020288	0056	14430	760															
042		OBS	0026	-0155	32754	2637			14394	762															
		STD	0030	-0156	3280	2641	0016254	0074	14395	750															
		STD	0050	-0160	3301	2658	0014616	0105	14399	708															
042		OBS	0051	-0160	33018	2659			14399	706															
		STD	0075	-0163	3328	2680	0012517	0139	14406	689															
042		OBS	0076	-0163	33291	2681			14406	688															
		STD	0100	-0162	3338	2688	0011734	0170	14411	684															
042		OBS	0102	-0162	33392	2689			14412	683															
		STD	0125	-0154	3353	2700	0010589	0197	14422	656															
		STD	0150	-0122	3366	2710	0009679	0223	14443	634															
042		OBS	0152	-0118	33675	2711			14445	633															
		STD	0200	0025	3392	2724	0008343	0268	14522	614															
042		OBS	0202	0028	33929	2725			14524	613															
		STD	0250	0020	3417	2745	0006411	0305	14532	556															
042		OBS	0254	0019	34178	2745			14532																
		STD	0300	0057	3422	2747	0006256	0336	14558	531															
042		OBS	T0305	0066	34236	2747			14563	530															
042		OBS	0364	0258	34539	2758			14662	549															
		STD	0400	0202	3451	2760	0005205	0394	14643	535															
042		OBS	0405	0197	34500	2760			14641	533															
042		OBS	T0455	0175	34496	2761			14640	522															

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	MARSSEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER				
						10°	1°	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT			
31	549	EV	66410N	057560W	222	67	08	06	077	1965	LCE	9493	0640	06	16	3	2		X2	4	8		0085			
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIL CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS											
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB														
								23	S13	956	028	025	8	11												
MISSING TIME OF HR 1/10	CAS NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$		$\Delta \rho$ DYN. M. $\times 10^3$	SOUND VELOCITY		O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{dl/l}$	TOTAL-P $\mu\text{g} - \text{dl/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{dl/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{dl/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{dl/l}$	pH	STATION NO.						
077		STD	0000	0275	3108	2480		0031561		0000	14562		752													
		OBS	0000	0275	31075	2480					14562		752	060	090	001	000	006								
		STD	0010	0274	3105	2478		0031737		0032	14563		757													
077		OBS	0010	0274	31051	2478					14563		757	059	075	000	000	006								
		STD	0020	-0021	3214	2583		0021745		0058	14447		795													
077		OBS	0026	-0141	32599	2624					14398		805	089	106	010	026	008								
		STD	0030	-0144	3265	2628		0017434		0078	14398		793													
		STD	0050	-0158	3286	2646		0015772		0111	14398		747													
077		OBS	0052	-0159	32873	2647					14398		744			017	059	011								
		STD	0075	-0166	3299	2657		0014735		0149	14400		720													
077		OBS	0078	-0167	33006	2658					14400		717	056	123	001	068	012								
		STD	0100	-0159	3316	2670		0013429		0185	14410		694													
077		OBS	0104	-0158	33192	2673					14411		691	113	127	001	085	014								
		STD	0125	-0159	3332	2683		0012184		0217	14416		693													
		STD	0150	-0161	3347	2695		0011013		0246	14422		696													
077		OBS	0155	-0161	33503	2698					14423		696	097	109	004	089	011								
		STD	0200	-0114	3378	2719		0008764		0295	14456		627													
		OBS	0207	-0105	33814	2721					14462		618	116	126	001	119	016								
		STD	0250	-0006	3402	2734		0007408		0335	14518		581													
		STD	0300	0074	3421	2745		0006441		0370	14565		548													
077		OBS	T0316	0092	34257	2748					14577		540	120	122	000	153	019								
		STD	0400	0116	3439	2757		0005389		0429	14603		518													
077		OBS	T0407	0117	34397	2757					14605		517	119	127	000	154	022								
		STD	0500	0118	3447	2763		0004821		0480	14622		512													
077		OBS	T0575	0118	34487	2764					14635		508	129	148	001	162	026								

REFERENCE	SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOGC STATION NUMBER
					10"	1"	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA	TYPE	AMT	

					WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS	
					COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	(mb)		DRY BULB	WET BULB						
							18	512	966	022	022	3	11					

MESSAGE TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$	$\Sigma \Delta \sigma$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH	SOUND
		STD	0000	0084	2993	2401	0039112	0000	14461	800							
092		OBS	0000	0084	29930	2401			14461	800	060	080	002	000	006		
		STD	0010	-0005	3177	2553	0024623	0032	14447	840							
092		OBS	0010	-0005	31773	2553			14447	840	070	095	004	001	007		
		STD	0020	-0066	3252	2616	0018669	0054	14431	778							
092		OBS	0023	-0082	32682	2629			14427	764	077	091	008	018	007		
		STD	0030	-0115	3278	2638	0016514	0071	14414	753							
092		OBS	0047	-0164	32966	2655			14396	727	100	115	005	061	010		
		STD	0050	-0164	3299	2656	0014761	0102	14397	722							
092		OBS	0070	-0161	33127	2667			14403	697	112	125	004	078	013		
		STD	0075	-0160	3316	2670	0013445	0138	14405	695							
092		OBS	0094	-0156	33273	2679			14412	687	115	132	003	086	014		
		STD	0100	-0155	3330	2681	0012366	0170	14414	687							
		STD	0125	-0151	3343	2692	0011363	0200	14421	683							
092		OBS	0139	-0149	33499	2697			14426	677	112	125	002	096	014		
		STD	0150	-0140	3356	2702	0010385	0227	14433	667							
092		OBS	0186	-0103	33750	2716			14459	635	111	120	005	115	015		
		STD	0200	-0070	3383	2721	0008558	0274	14477	622							
		STD	0250	0022	3405	2735	0007335	0314	14531	581							
092		OBS	0281	0059	34153	2741			14555	561	146	127	002	136	017		
		STD	0300	0063	3418	2743	0006597	0349	14560	552							
092		OBS	T0379	0075	34270	2750			14580	522	125	136	002	158	021		
		STD	0400	0075	3429	2751	0005855	0411	14584	520							
		STD	0500	0077	3438	2758	0005199	0466	14602	509							
		STD	0600	0079	3444	2763	0004742	0516	14621	499							
092		OBS	T0600	0079	34444	2763			14621	499	119	129	002	132	024		

REFERENCE	SHIP CODE	LATITUDE * 1/10	LONGITUDE * 1/10	DRIFT INDICATOR	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOGC STATION NUMBER
					10"	1"	MO	DAY	HR. 1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA	TYPE	AMT	

WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS	
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mb)	DRY BULB	WET BULB							
		18	512	966	039	039	3	12					

MESSAGE TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$	$\Sigma \Delta \sigma$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{at/l}$	TOTAL-P $\mu\text{g} - \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{at/l}$	pH	SOUND
		STD	0000	-0063	2998	2410	0038215	0000	14394	808							
116		OBS	0000	-0063	29976	2410			14394	808	064	084	004	000	002		
		STD	0010	0033	3232	2595	0020624	0029	14472	870							
116		OBS	0010	0033	32318	2595			14472	870	056	079	002	000	006		
		STD	0020	-0077	3267	2628	0017482	0048	14428	847							
116		OBS	0025	-0117	32812	2641			14412	832	072	109	011	015	008		
		STD	0030	-0132	3289	2648	0015622	0065	14407	798							
		STD	0050	-0164	3317	2671	0013377	0094	14399	708							
116		OBS	0051	-0165	33184	2672			14399	706	100	110	007	069	013		
		STD	0075	-0147	3342	2691	0011485	0125	14415	708							
116		OBS	0076	-0146	33427	2691			14416	703	095	114	011	078	011		
		STD	0100	-0123	3362	2706	0010009	0152	14433	652							
116		OBS	0101	-0122	33623	2707			14434	650	111	124	002	111	014		
		STD	0125	-0117	3372	2714	0009250	0176	14442	633							
		STD	0150	-0112	3382	2722	0008506	0198	14449	613							
116		OBS	0150	-0112	33818	2722			14449	613	118	127	003	118	017		
		STD	0200	-0062	3397	2733	0007495	0238	14483	569							
116		OBS	T0200	-0062	33974	2733			14483	569	122	131	002	115	019		
		STD	0250	-0020	3405	2737	0007106	0275	14512	549							
		STD	0300	0009	3412	2741	0006725	0309	14535	535							
116		OBS	0305	0011	34122	2741			14536	534	128	140	002		021		
116		OBS	T0398	0029	34240	2750			14562	522	120	131	002	146	021		
		STD	0400	0030	3424	2750	0005919	0373	14562	522							
		STD	0500	0065	3433	2755	0005504	0430	14596	519							
116		OBS	T0599	0078	34413	2761			14620	511	126	133	000	163	025		
		STD	0600	0078	3441	2761	0004967	0482	14620	511							
		STD	0700	0069	3445	2764	0004655	0530	14633	498							
116		OBS	T0708	0067	34450	2765			14633	497	130	139	002	166	029		



REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	MARS SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER		
CTRY CODE	IQ. NO.					10"	1"	MO	DAY		HR.1/10	CRUISE NO.			STATION NUMBER	DIR.	HGT		PER	SEA		TYPE	AMT
31	549	EV	66410N	059100W	222	69	08	06	137	1965	LCE	9496	0928	09	18	0	2		X4	X	9		0088
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mb)	DRY BULB	WET BULB											
								19 <td>S20</td> <td>956</td> <td>022</td> <td>022</td> <td>3</td> <td>12</td> <th colspan="6"></th>		S20	956	022	022	3	12								
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T		SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>		Σ Δ ρ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY		O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S C			
137	STD	0000	-0002	3003	2413			0037968		0000	14423	799											
	OBS	0000	-0002	30033	2413																		
	STD	0010	0042	3088	2479			0031653		0035	14457	814	063	085	002	000	007						
137	STD	0020	0087	3162	2536			0026214		0064	14489	830											
	OBS	0026	0113	32019	2567						14507	839	032	058	011	000	003						
	STD	0030	0079	3229	2590			0021065		0087	14496	819											
137	STD	0050	-0057	3325	2674			0013099		0122	14451	745											
	OBS	0052	-0068	33310	2679						14447	740	078	107	011	050	007						
	STD	0075	-0150	3342	2691			0011476		0152	14414	712											
137	OBS	0077	-0152	33436	2692						14413	710	082	098	016	083	009						
	STD	0100	-0111	3358	2703			0010355		0180	14438	692											
	OBS	0102	-0107	33592	2704						14441	691	094	101	009	098	009						
137	STD	0125	-0040	3373	2712			0009477		0204	14478	679											
	STD	0150	0013	3386	2720			0008740		0227	14508	660											
	OBS	0152	0016	33865	2720						14510	658	101	110	005	115	011						
137	STD	0200	0054	3405	2733			0007524		0268	14537	601											
	OBS	T0203	0056	34058	2734						14539	598	112	121	004	131	014						
	STD	0250	0062	3417	2742			0006664		0303	14551	563											
137	STD	0300	0069	3425	2748			0006103		0335	14563	536											
	OBS	0304	0069	34260	2749						14564	534	124	131	003	155	021						
	STD	0400	0058	3434	2756			0005362		0392	14577	513											
137	OBS	T0404	0058	34346	2757						14577	512	123	137	001	156	024						
	STD	0500	0064	3440	2761			0004952		0444	14596	512											
	STD	0600	0070	3446	2765			0004574		0492	14617	512											
137	OBS	T0606	0070	34460	2765						14618	512	125	140	001	151	027						
	STD	0700	0059	3447	2767			0004410		0537	14629	500											
	STD	0800	0048	3447	2767			0004330		0580	14640	488											
137	OBS	T0809	0047	34473	2768						14642	487	127	135	001	158	034						
	STD	0900	0047	3447	2767			0004327		0624	14657	489											
137	OBS	T0910	0047	34469	2767						14658	490	128	139	000	160	035						

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	MARS- SQUARE	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER						
CTRY CODE	ID. NO.					10"	1"		MO	DAY			HR./10	CRUISE NO.	STATION NUMBER		DIR.	HGT		PER	SEA	TYPE	AMT		
31	549	EV	66410N	059340W	222	69	08	06	154	1965	LCE	9497	0836	08	17	1	2		X1	4	4		0089		
						WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS										
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB													
								17	S12	976	022	017	7	13											
MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ ρ DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	SiO <sub>4</sub> -Si μg - at/l	pH	S CODE								
154	STD	0000	-0009	3039	2442	0035229	0000	14425	812																
	OBS	0000	-0009	30387	2442			14425	812		066	089	002	000	006										
	STD	0010	-0073	3160	2542	0025706	0030	14413	820																
	OBS	0020	-0120	3247	2613	0018886	0053	14405	827																
154	STD	0025	-0138	32782	2639			14402	831		088	110	013	029	009										
	OBS	0030	-0146	3285	2645	0015893	0070	14400	805																
154	STD	0050	-0164	3308	2664	0014091	0100	14398	729																
	OBS	0050	-0164	33077	2664			14398	729																
154	STD	0074	-0161	33256	2678			14406	698		099	115	001	063	011										
	OBS	0075	-0161	3326	2678	0012675	0134	14406	699		112	121	001	084	015										
154	STD	0099	-0165	33430	2692			14411	713																
	OBS	0100	-0164	3344	2693	0011268	0164	14411	712		095	109	013	087	013										
154	STD	0125	-0146	3357	2703	0010306	0190	14426	679																
	OBS	0148	-0129	33681	2711			14439	657		115	120	003	092	014										
154	STD	0150	-0126	3369	2712	0009436	0215	14441	656																
	OBS	T0198	-0028	33899	2725			14498	633		110	121	005	121	013										
154	STD	0200	-0020	3391	2726	0008181	0259	14502	632																
	OBS	0250	0159	3422	2740	0006953	0297	14595	611																
154	STD	0296	0274	34408	2746			14656	597		105	113	002	133	013										
	OBS	0300	0285	3441	2745	0006597	0331	14661	597																
154	STD	T0345	0343					589			109	121	001	146	013										
	OBS	T0394	0262	34517	2756			566			117	121	002	138	016										
154	STD	0400	0254	3451	2756	0005624	0392	14666	564																
	OBS	0500	0138	3446	2761	0005055	0445	14631	535																
154	STD	T0594	0070	34426	2762			14615	516		126	134	000	155	026										
	OBS	0600	0069	3443	2763	0004803	0495	14616	516																
154	STD	0700	0059	3443	2763	0004707	0542	14628	509																
	OBS	T0795	0058	34433	2764			14644	503		129	134	001	163	030										
154	STD	0800	0058	3444	2764	0004671	0589	14645	504																
	OBS	0814	0059	34441	2764			14647	507		123	134	002	159	031										

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH INCHES	MARSOEN SQUARE		STATION TIME IGMT			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER		SEA	TYPE	
31	549	EV	6641 N	06000 W	223	60	08	06	175	1965	LCE	9498	0640	06	18	1	2		X1	4	1	0090
						WATER		WIND		BARO- METER (inbs)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB										
								18	S10	990	028	022	8	11								
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$	$\Sigma \Delta$ D DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} \cdot \text{at/l}$	TOTAL-P $\mu\text{g} \cdot \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} \cdot \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{at/l}$	Si O <sub>4</sub> -Si $\mu\text{g} \cdot \text{at/l}$	pH	S C					
175		STD	0000	0009	3053	2452	0034200	0000	14435	823												
		OBS	0000	0009	30530	2452			14435	823	067	086	001	000	006							
		STD	0010	-0075	3182	2559	0024012	0029	14416	791												
175		STD	0020	-0133	3268	2631	0017239	0050	14402	766												
		OBS	0022	-0142	32796	2640			14400	762	097	120	024	045	010							
		STD	0030	-0156	3285	2645	0015869	0066	14395	753												
175		OBS	0044	-0170	32927	2651			14392	739	107	124	005	061	011							
		STD	0050	-0170	3293	2652	0015208	0097	14393	734												
175		OBS	0065	-0169	32991	2657			14397	720	105	121	001	074	012							
		STD	0075	-0167	3309	2665	0013965	0134	14401	709												
175		OBS	0088	-0164	33201	2674			14406	696	107	118	002	079	014							
		STD	0100	-0159	3327	2679	0012587	0167	14412	678												
		STD	0125	-0147	3341	2690	0011528	0197	14423	656												
175		OBS	0130	-0145	33441	2693			14425	654	117	131	003	104	016							
		STD	0150	0019	3354	2694	0011206	0226	14506	663												
175		OBS	T0172	0139	33641	2695			14565	666	107	121	003	097	013							
		STD	0200	0100	3376	2707	0010012	0279	14554	646												
		STD	0250	0031	3398	2729	0007917	0323	14534	618												
175		OBS	T0255	0024	34003	2731			14532	616	113	123	004	127	014							
		STD	0300	0184	3428	2743	0006710	0360	14615	605												
175		OBS	T0336	0259	34425	2748			14656	593	108	110	002	124	013							
		STD	0400	0152	3440	2755	0005588	0422	14619	549												
175		OBS	T0488	0065	34383	2759			14595	514	106	115	001	162	023							
		STD	0500	0065	3439	2760	0005069	0475	14597	514												
		STD	0600	0067	3441	2761	0004897	0525	14615	516												
175		OBS	T0628	0068	34419	2762			14620	517	218	270	026	154	039							

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DEPTH INCHES	MARSOEN SQUARE		STATION TIME IGMT			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES			NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	AMT		
31	549	EV	6641 N	06026 W	223	60	08	06	195	1965	LCE	9499	0525	05	18	2	2		X1	3	2		0091	
		WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. COOL	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS												
		COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mbs)	(mbs)	DRY BULB	WET BULB															
				18	S18	973	033	022	8	10														
MESSAGE TIME HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Delta$ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>2</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	Si O <sub>4</sub> -Si μg - at/l	pH	S C							
195		STD	0000	-0045	3161	2542	0025719	0000	14425	853														
		OBS	0000	-0045	31611	2542			14425	853	056	095	001	000	004									
		STD	0010	-0081	3201	2575	0022536	0024	14415	845														
		STD	0020	-0111	3235	2603	0019832	0045	14408	830														
195		OBS	0026	-0126	32525	2618			14404	818	094	111	013	026	009									
		STD	0030	-0134	3263	2627	0017613	0064	14403	800														
		STD	0050	-0162	3300	2657	0014687	0096	14398	739														
195		OBS	0052	-0163	33022	2659			14398	735	106	131	011	066	013									
		STD	0075	-0160	3306	2662	0014212	0132	14404	728														
195		OBS	0078	-0160	33073	2663			14404	726	108	118	009	079	012									
		STD	0100	-0159	3320	2673	0013122	0167	14410	695														
195		OBS	0104	-0159	33222	2675			14411	690	113	126	002	089	014									
		STD	0125	0025	3338	2681	0012459	0199	14503	668														
		STD	0150	0128	3354	2688	0011857	0229	14555	645														
195		OBS	T0155	0133	33567	2689			14559	641	131	144	004	108	017									
		STD	0200	-0083	3380	2720	0008732	0280	14471	611														
195		OBS	T0206	-0101	33821	2722			14464	607	125	127	002	130	018									
		STD	0250	-0061	3395	2731	0007667	0321	14492	576														
		STD	0300	-0023	3407	2739	0006929	0358	14519	550														
195		OBS	T0309	-0017	34084	2740			14524	546	149	176	004	146	022									
		STD	0400	0030	3423	2749	0006010	0423	14562	525														
195		OBS	T0407	0032	34241	2750			14564	524	139	152	004	154	023									
		STD	0500	0037	3434	2758	0005219	0479	14583	514														
195		OBS	0511	0037	34353	2759			14586	513	147	172	005	157	026									

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	EMFT INDEX	MARSDEN SQUARE	STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER	
CTRY CODE	ID. NO.						MO	DAY		CRUISE NO.	STATION NUMBER			DIR	HGT PER	SEA		TYPE	AMT		
31	549	EV	6641 N	06052 W	223	60	08	06	216	1965	LCE	9500	0421	04	18	2	2	X1	3	3	0092
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS					
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	METER (mbars)	ORY BULE	WET BULE									
									20	524	983	022	017	8	08						

MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-210°	Σ Δ D DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	S C
216		STD	0000	-0053	3143	2527	0027073	0000	14419	835							
		OBS	0000	-0053	31431	2527			14419	835							
		STD	0010	-0094	3186	2563	0023648	0025	14407	820	064	096	003	005	004		
216		STD	0020	-0126	3222	2593	0020790	0048	14399	803							
		OBS	0025	-0138	32374	2606			14396	794	106	154	013	033	011		
		STD	0030	-0144	3250	2616	0018587	0067	14396	779							
216		STD	0050	-0163	3285	2645	0015837	0102	14395	738							
		OBS	0051	-0164	32858	2646			14395	737	107	118	010	060	010		
		STD	0075	-0172	3296	2654	0014953	0140	14397	727							
216		OBS	0076	-0172	32966	2655			14397	726	120	145	005	067	013		
		STD	0100	-0161	3312	2667	0013731	0176	14408	700							
		STD	0125	-0147	3328	2680	0012524	0209	14421	674							
216		OBS	T0129	-0144	33301	2681			14424	670	117	131	002	097	016		
		STD	0150	-0125	3344	2692	0011351	0239	14438	648							
		OBS	0180	-0101	33622	2706			14457	621	135	196	005	118	021		
216		STD	0200	-0088	3372	2713	0009322	0290	14468	606							
		STD	0250	-0058	3394	2730	0007757	0333	14493	573							
		OBS	T0284	-0039	34044	2737			14509	555	153	166	005	147	022		
216		STD	0300	-0030	3408	2740	0006816	0370	14516	548							
		OBS	T0388	0015	34192	2747			14553	522	133	142	004	153	023		

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	EMFT INDEX	MARSDEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NDDC STATION NUMBER
CTRY CODE	ID. NO.						MO	DAY	CRUISE NO.		STATION NUMBER	DIR			HGT PER	SEA	TYPE		AMT		
31	549	EV	6256 N	05711 W	222	27	08	08	185	1965	LCE	9501	2261	22	35	2	2	X8	5	8	0093
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS					
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	METER (mbars)	DRY BULB	WET BULB									
									31	510	054	128	111	8	18						

MESSNGR TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-210°	Σ Δ D DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>2</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	S C
185		STD	0000	0782	3398	2652	0015229	0000	14809	672							
		OBS	0000	0782	33978	2652			14809	672							
		STD	0010	0734	3403	2663	0014202	0015	14793	680							
185		STD	0020	0685	3410	2675	0013050	0028	14776	688							
		OBS	0026	0654	34166	2685			14766	693							
		STD	0030	0623	3424	2694	0011236	0040	14755	686							
185		STD	0050	0519	3453	2730	0007864	0060	14720	664							
		OBS	0052	0514	34554	2733			14719	663							
		STD	0075	0523	3472	2745	0006515	0078	14728	663							
185		OBS	0078	0524	34740	2746			14729	663							
		STD	0100	0515	3479	2751	0005933	0093	14730	651							
		OBS	0103	0514	34802	2752			14730	650							
185		STD	0125	0520	3486	2756	0005498	0107	14737	653							
		STD	0150	0525	3490	2759	0005288	0121	14744	657							
		OBS	0156	0526	34911	2760			14745	658							
185		STD	0200	0531	3494	2761	0005123	0147	14755	632							
		OBS	T0209	0532	34948	2762			14757	629							
		STD	0250	0521	3495	2763	0005030	0172	14759	634							
185		STD	0300	0508	3494	2764	0004968	0197	14762	640							
		OBS	0313	0505	34940	2764			14763	641							
		STD	0400	0483	3493	2766	0004873	0247	14768	630							
185		OBS	T0419	0478	34925	2766			14769	628							
		STD	0500	0461	3492	2768	0004772	0295	14776	627							
		STD	0600	0441	3492	2770	0004659	0342	14784	626							
185		OBS	0631	0435	34921	2771			14786	625							
		STD	0700	0422	3492	2772	0004545	0388	14793	623							
		STD	0800	0405	3492	2774	0004442	0433	14802	620							
185		OBS	0851	0397	34921	2775			14807	619							
		STD	0900	0392	3492	2775	0004399	0477	14813	620							
		STD	1000	0383	3492	2776	0004396	0521	14826	623							
185		OBS	1071		34913				14826	625							
		STD	1100	0373	3491	2777	0004389	0565	14839	628							
		STD	1200	0363	3491	2778	0004356	0609	14851	640							
199		OBS	T1252	0358	34913	2778			14858	646							
		OBS	1277	0360	34914	2778			14863	629							
		STD	1300	0360	3492	2779	0004349	0652	14867	628							
185		STD	1400	0356	3492	2779	0004381	0696	14882	623							
		STD	1500	0352	3493	2780	0004337	0739	14897	619							
		OBS	1559	0348	34931	2781			14906	616							
199		STD	1750	0332	3493	2782	0004250	0847	14931	630							
		OBS	T1843	0322	34934	2783			14943	636							
		STD	2000	0303	3493	2785	0004044	0950	14961	615							
199		OBS	T2031	0296	34933	2786			14964	614							
		OBS	2219	0237	34926	2790			14970	637							

REFERENCE		SHIP CODE	LATITUDE 1°/10	LONGITUDE 1°/10	MARS DEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER	
CTRY CODE	ID. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER		DIR.	HGT		PER	SEA		TYPE
31	549	EV	6200 N	05610 W	222	26	08	09	023	1965	LCE	9502		2651	26	29	1	2		X1	4	7	0094
						WATER		WIND		BARO- METER (mba)	AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS								
						COLOR CODE	TRANS. (mm)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB											
									34	S12	075	094	078	8	18								

MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$ ?	$\Sigma \Delta D$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} - \text{ol/l}$	TOTAL-P $\mu\text{g} - \text{ol/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{ol/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{ol/l}$	SiO <sub>4</sub> -Si $\mu\text{g} - \text{ol/l}$	pH	STN
		STD	0000	0779	3377	2636	0016758	0000	14805	632							
		OBS	0000	0779	33767	2636			14805	632							
		STD	0010	0606	3388	2668	0013693	0015	14740	682							
		STD	0020	0476	3401	2694	0011258	0028	14690	711							
039		OBS	0028	0403	34117	2710			14663	720							
		STD	0030	0398	3416	2714	0009344	0038	14661	712							
		STD	0050	0368	3449	2744	0006588	0054	14656	654							
039		OBS	0057	0366	34566	2750			14658	641							
		STD	0075	0395	3465	2753	0005671	0069	14674	635							
039		OBS	0085	0407	34690	2755			14681	631							
		STD	0100	0417	3472	2757	0005393	0083	14688	624							
039		OBS	0112	0424	34747	2758			14694	621							
		STD	0125	0432	3477	2759	0005199	0096	14700	626							
		STD	0150	0444	3480	2760	0005129	0109	14709	633							
039		OBS	0168	0452	34826	2761			14716	636							
		STD	0200	0462	3485	2762	0005005	0135	14725	632							
039		OBS	T0222	0466	34867	2763			14731	631							
		STD	0250	0463	3487	2764	0004922	0159	14734	634							
		STD	0300	0458	3487	2764	0004921	0184	14741	641							
039		OBS	0337	0454	34876	2765			14745	645							
		STD	0400	0445	3488	2766	0004807	0233	14752	605							
039		OBS	0450		34889				584								
		STD	0500	0432	3489	2769	0004689	0280	14763	587							
		STD	0600	0419	3489	2770	0004641	0327	14774	599							
039		OBS	0675	0411	34891	2771			14783	612							
		STD	0700	0409	3489	2771	0004601	0373	14787	623							
		STD	0800	0399	3490	2773	0004505	0419	14799	656							
039		OBS	0899		34912				673								
		STD	0900	0390	3491	2775	0004440	0463	14812	673							
		STD	1000	0382	3491	2775	0004435	0508	14826	662							
		STD	1100	0374	3491	2776	0004426	0552	14839	654							
039		OBS	T1150	0371	34907	2776			14846	650							
		STD	1200	0367	3491	2777	0004448	0596	14853	649							
		STD	1300	0361	3491	2777	0004450	0641	14867	644							
039		OBS	T1347	0359	34908	2778			14874	641							
		STD	1400	0358	3491	2778	0004479	0685	14883	633							
		STD	1500	0356	3492	2779	0004461	0730	14899	623							
023		OBS	T1531	0355	34924	2779			14904	622							
		STD	1750	0346	3493	2781	0004455	0842	14937	639							
023		OBS	1789	0343	34932	2781			14942	642							
023		OBS	T1967	0325	34935	2783			14965	632							
		STD	2000	0322	3494	2783	0004283	0951	14969	627							
023		OBS	2218	0294	34936	2786			14995	611							
		STD	2500	0246	3493	2790	0003593	1148	15023	630							
023		OBS	T2566	0233	34925	2791			15028	641							



REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	OBS. INSTR.	MARSDEN SQUARE		STATION TIME (GMT)		YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NOOC STATION NUMBER
CTRY CODE	IO, NO.					10"	1"	MO	DAY	HR./10	CRUISE NO.	STATION NUMBER			DIR.	HGT	PER SEA		TYPE	AMT	

MESSING TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ σ DTN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - dl/l	TOTAL-P μg - dl/l	NO <sub>3</sub> -N μg - dl/l	NO <sub>2</sub> -N μg - dl/l	SIO <sub>4</sub> -S μg - dl/l	pH	S CC
128		STD	0000	0804	3408	2657	0014756	0000	14819	660							
		OBS	0000	0804	34083	2657			14819	660							
		STD	0010	0803	3412	2660	0014498	0015	14821	660							
128		STD	0020	0802	3415	2663	0014245	0029	14822	660							
		OBS	0026	0801	34173	2664			14823	660							
		STD	0030	0724	3428	2684	0012238	0042	14795	658							
128		STD	0050	0471	3468	2748	0006210	0061	14702	647							
		OBS	0052	0458	34706	2751			14697	646							
		STD	0075	0484	3483	2758	0005256	0075	14714	637							
128		OBS	0077	0485	34832	2758			14714	636							
		STD	0100	0487	3485	2759	0005166	0088	14719	638							
		OBS	0102	0487	34856	2760			14720	638							
139		STD	0125	0493	3488	2761	0005039	0101	14726	638							
		STD	0150	0499	3489	2761	0005066	0113	14733	637							
		OBS	0153	0500	34895	2761			14734	637							
139		STD	0200	0483	3489	2763	0004941	0138	14735	636							
		OBS	0204	0482	34885	2763			14735	636							
		STD	0250	0474	3488	2763	0004971	0163	14739	634							
128		STD	0300	0462	3488	2765	0004891	0188	14742	632							
		OBS	T0305	0461	34876	2764			14743	632							
		STD	0400	0430	3487	2768	0004683	0236	14745	633							
139		OBS	0405	0429	34874	2768			14746	633							
		STD	0500	0407	3487	2770	0004571	0282	14752	634							
		STD	0600	0391	3486	2771	0004540	0328	14762	635							
139		OBS	T0605	0390	34861	2771			14763	635							
		STD	0700	0385	3488	2773	0004423	0372	14776	633							
		STD	0800	0379	3489	2774	0004370	0416	14791	631							
139		OBS	0810	0378	34894	2775			14792	631							
		STD	0900	0370	3489	2775	0004331	0460	14804	633							
		STD	1000	0364	3489	2776	0004354	0503	14818	635							
139		OBS	T1037	0362	34892	2776			14823	636							
		STD	1100	0362	3490	2776	0004392	0547	14834	634							
		STD	1200	0361	3490	2777	0004419	0591	14850	631							
139		OBS	T1241	0360	34903	2777			14857	630							
		STD	1300	0358	3491	2778	0004398	0635	14866	628							
		OBS	1366	0357	34924	2779			14877	626							
115		STD	1400	0357	3493	2780	0004320	0679	14882	623							
		STD	1500	0356	3493	2780	0004388	0722	14899	617							
		OBS	1560	0354	34935	2780			14908	615							
115		STD	1750	0344	3494	2781	0004385	0832	14936	618							
		OBS	1851	0336	34936	2782			14950	619							
		STD	2000	0322	3494	2783	0004283	0940	14969	615							
115		OBS	T2047	0317	34934	2784			14975	614							
		STD	2500	0276	3493	2787	0004010	1148	15035	619							
		OBS	2545	0269	34925	2787			15040	621							
115		OBS	T2844	0204	34908	2792			15064	636							

REFERENCE		SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	DIR. INCH	MARSDEN SQUARE		STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLDUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR.1/10			CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA	TYPE	AMT	

31	549	EV	6008 N	05443 W	222	04	08	09	207	1965		LCE	9504		3194	32	28	3	2		X1	8	6	0096
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WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mbs)		DRY BULB	WET BULB			

		28	507	119		100	083	8	18	
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MESSAGE TIME OF HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PD <sub>4</sub> -P $\mu\text{g} - \text{dl/l}$	TOTAL-P $\mu\text{g} - \text{dl/l}$	NO <sub>2</sub> -N $\mu\text{g} - \text{dl/l}$	NO <sub>3</sub> -N $\mu\text{g} - \text{dl/l}$	Si D <sub>4</sub> -Si $\mu\text{g} - \text{dl/l}$	pH	S.S. CLC
		STD	0000	0888	3424	2656	0014823	0000	14853	666							
218	OBS	0000	0888	34239	2656				14853	666							
	STD	0010	0829	3432	2672		0013370	0014	14833	666							
	STD	0020	0763	3440	2688		0011859	0027	14810	666							
218	OBS	0027	0711	34461	2700				14792	666							
	STD	0030	0675	3449	2707		0010027	0038	14779	664							
	STD	0050	0501	3467	2743		0006614	0054	14714	650							
218	OBS	0053	0485	34687	2747				14709	649							
	STD	0075	0454	3479	2758		0005230	0069	14701	642							
218	OBS	0080	0450	34805	2760				14700	641							
	STD	0100	0452	3482	2761		0005005	0082	14704	639							
218	OBS	0106	0452	34660	27480				638								
	STD	0125	0444	3483	2763		0004877	0094	14705	639							
	STD	0150	0435	3484	2764		0004733	0106	14706	640							
218	OBS	0160	0432	34846	2765				14706	641							
	STD	0200	0422	3485	2767		0004571	0130	14709	640							
218	OBS	0213	0418	34855	2767				14709	640							
	STD	0250	0404	3484	2768		0004506	0152	14709	645							
	STD	0300	0391	3483	2768		0004492	0175	14712	652							
218	OBS	T0315	0388	34826	2768				14713	654							
	STD	0400	0383	3485	2771		0004350	0219	14725	643							
218	OBS	0426	0382	34856	2771				14729	641							
	STD	0500	0384	3486	2771		0004379	0263	14743	640							
	STD	0600	0387	3487	2772		0004428	0307	14761	639							
218	OBS	T0635	0388	34875	2772				14767	639							
	STD	0700	0378	3488	2773		0004381	0351	14773	639							
	STD	0800	0366	3488	2774		0004325	0394	14785	638							
218	OBS	0847	0362	34876	2775				14791	638							
	STD	0900	0361	3488	2775		0004323	0437	14800	646							
	STD	1000	0358	3488	2776		0004372	0481	14815	654							
218	OBS	T1081	0356	34886	2776				14828	655							
	STD	1100	0355	3489	2776		0004375	0525	14831	653							
	STD	1200	0353	3489	2776		0004440	0569	14847	643							
218	OBS	T1273	0352	34884	2776				14858	637							
	STD	1300	0352	3488	2776		0004520	0614	14863	636							
	STD	1400	0354	3488	2776		0004624	0659	14880	631							
	STD	1500	0355	3488	2776		0004721	0706	14898	627							
207	OBS	1564	0356	34882	2776				14909	625							
	STD	1750	0350	3490	2778		0004727	0824	14938	620							
	STD	2000	0337	3493	2781		0004559	0940	14976	613							
207	OBS	T2050	0333	34930	2782				14982	612							
	STD	2500	0289	3494	2787		0004136	1157	15041	628							
207	OBS	T2531	0285	34939	2787				15045	629							
	STD	3000	0216	3491	2791		0003556	1350	15096	637							
207	OBS	3008	0214	34908	2791				15096	637							
207	OBS	3151	0177	34907	2794				15105	640							

REFERENCE CITY CODE	ID. NO.	SHIP CODE	LATITUDE ° 1/10	LONGITUDE ° 1/10	MARSDEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'MPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
						10"	1"	MO	DAY	HR.1/10	CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA		TYPE	A.M.T	
31	549	EV	5916 N	05355 W	186	93	08	10	050	1965	LCE	9505	3191	28	20	1	2		X1	4	4	0097

WATER		WIND		BARO- METER (mb)	AIR TEMP. °C		VIS. CODE	HD. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE		DRY BULB	WET BULB			
		19	S10	112	100	086	8	18	

MESSANGER TIME HR 1/10	CASST ND.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_{\theta}$	S Δ D DYN. M. X 10 <sup>3</sup>	SOUND VELOCITY	D <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - at/l	TOTAL-P μg - at/l	NO <sub>3</sub> -N μg - at/l	NO <sub>3</sub> -N μg - at/l	Si O <sub>4</sub> -Si μg - at/l	pH	S CC
		STD	0000	0891	3448	2675	0013066	0000	14857	653							
064		OBS	0000	0891	34482	2675			14857	653							
		STD	0010	0836	3452	2686	0011986	0013	14838	634							
		STD	0020	0767	3457	2701	0010650	0024	14814	625							
064		OBS	0025	0727	34596	2708			14800	624							
		STD	0030	0659	3463	2720	0008777	0034	14774	630							
		STD	0050	0473	3475	2753	0005706	0048	14704	654							
064		OBS	0051	0467	34752	2754			14702	655							
		STD	0075	0433	3480	2761	0004937	0061	14692	643							
064		OBS	0076	0432	34803	2762			14692	642							
		STD	0100	0459	3487	2764	0004711	0073	14708	637							
064		OBS	0102	0460	34876	2764			14709	636							
		STD	0125	0437	3486	2766	0004578	0085	14703	638							
		STD	0150	0420	3484	2766	0004559	0096	14700	641							
064		OBS	0152	0419	34841	2766			14699	641							
		STD	0200	0410	3484	2767	0004489	0119	14704	649							
064		OBS	0203	0409	34844	2767			14704	649							
		STD	0250	0398	3485	2769	0004405	0141	14707	645							
		STD	0300	0389	3485	2770	0004343	0163	14711	641							
064		OBS	T0303	0388	34847	2770			14711	641							
		STD	0400	0373	3485	2771	0004267	0206	14721	652							
064		OBS	0404	0372	34847	2771			14721	652							
		STD	0500	0367	3486	2773	0004190	0249	14735	651							
		STD	0600	0361	3486	2774	0004214	0291	14749	650							
064		OBS	0603		34861					650							
		STD	0700	0355	3486	2774	0004229	0333	14764	647							
		STD	0800	0349	3486	2775	0004240	0375	14778	643							
064		OBS	T0804	0349	34862	2775			14778	643							
		STD	0900	0348	3487	2776	0004251	0418	14794	650							
		STD	1000	0347	3487	2776	0004322	0460	14810	657							
064		OBS	1036	0347	34877	2776			14816	660							
		STD	1100	0347	3488	2777	0004324	0504	14827	650							
050		OBS	1124	0347	34882	2777			14831	648							
		STD	1200	0349	3488	2776	0004426	0547	14845	651							
064		OBS	T1208	0349	34877	2776			14846	651							
		STD	1300	0349	3488	2776	0004510	0592	14862	650							
		STD	1400	0350	3488	2776	0004593	0638	14879	648							
		STD	1500	0350	3489	2777	0004601	0684	14896	645							
050		OBS	T1623	0350	34895	2778			14917	641							
		STD	1750	0350	3491	2779	0004654	0799	14938	631							
		STD	2000	0345	3492	2780	0004705	0916	14979	617							
050		OBS	2103	0341	34926	2781			14995	614							
		STD	2500	0311	3493	2784	0004544	1147	15050	616							
050		OBS	2629	0299	34925	2785			15067	619							
050		OBS	T2807	0280	34931	2787			15090	626							

REFERENCE		SHIP CODE	LATITUDE 1/10	LONGITUDE 1/10	DEPTH INCHES	MARSDEN SQUARE		STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF SAMPL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODES		NODC STATION NUMBER
CTRY CODE	ID. NO.					10"	1"	MO	DAY	HR./10		CRUISE NO.	STATION NUMBER			DIR	HGT	PER	SEA	TYPE	AMT	

31	549	EV	5829 N	05254 W		186	82	08	10	137	1965	LCE	9506	3346	31	14	5	2		X2	3	18	0098
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WATER		WIND		BARO-		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS
COLOR CODE	TRANS. (m)	DIR.	SPEED OF FORCE	METER (mba)	DRY BULB	WET BULB				

		14	522	061	111	089	8	18		
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MESSAGE TIME HR 1/10	CAST NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME AND MALT-310°	$\Sigma \Delta$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} \cdot \text{at/l}$	TOTAL-P $\mu\text{g} \cdot \text{at/l}$	NO <sub>2</sub> -N $\mu\text{g} \cdot \text{at/l}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{at/l}$	SiO <sub>4</sub> -Si $\mu\text{g} \cdot \text{at/l}$	pH	S
		STD	0000	0911	3457	2678	0012725	0000	14866	652							
137		OBS	0000	0911	34569	2678			14866	652							
		STD	0010	0873	3458	2685	0012088	0012	14853	650							
		STD	0020	0816	3461	2696	0011046	0024	14834	649							
137		OBS	0025	0780	34626	2703			14821	648							
		STD	0030	0718	3466	2715	0009327	0034	14798	649							
		STD	0050	0528	3475	2746	0006327	0050	14727	651							
137		OBS	0050	0528	34749	2746			14727	651							
		STD	0075	0422	3479	2762	0004871	0064	14687	644							
137		OBS	0075	0422	34793	2762			14687	644							
137		OBS	0098	0415	34820	2765			14689	644							
		STD	0100	0414	3482	2765	0004604	0076	14689	645							
		STD	0125	0406	3483	2767	0004471	0087	14689	657							
137		OBS	0148	0399	34840	2768			14690	663							
		STD	0150	0399	3484	2768	0004356	0098	14691	663							
137		OBS	T0198	0388	34845	2770			14694	658							
		STD	0200	0387	3484	2769	0004281	0120	14694	658							
		STD	0250	0371	3484	2771	0004164	0141	14695	657							
137		OBS	0297	0362	34838	2772			14699	656							
		STD	0300	0362	3484	2772	0004117	0161	14700	656							
137		OBS	0398	0359	34850	2773			14715	652							
		STD	0400	0359	3485	2773	0004097	0203	14715	652							
		STD	0500	0355	3486	2774	0004105	0244	14730	651							
		STD	0600	0351	3486	2775	0004109	0285	14745	650							
137		OBS	T0601	0351	34860	2775			14745	650							
		STD	0700	0349	3486	2775	0004151	0326	14761	651							
		STD	0800	0346	3487	2776	0004183	0368	14776	652							
137		OBS	0804	0346	34865	2776			14777	652							
		STD	0900	0366	3487	2774	0004455	0411	14802	652							
		STD	1000	0380	3487	2773	0004706	0457	14824	652							
137		OBS	1034	0382	34876	2773			14831	652							
		STD	1100	0372	3488	2774	0004623	0503	14838	651							
		STD	1200	0360	3488	2775	0004561	0549	14849	649							
		STD	1300	0352	3488	2776	0004545	0595	14863	645							
137		OBS	T1390	0349	34885	2777			14877	641							
		STD	1400	0349	3489	2777	0004514	0640	14879								
144		OBS	T1464	0349	34891	2777			14889								
		STD	1500	0349	3489	2777	0004575	0685	14896								
		STD	1750	0352	3491	2778	0004686	0801	14939								
144		OBS	1950	0354	34922	2779			14974								
		STD	2000	0352	3492	2780	0004772	0919	14982								
144		OBS	2420	0327	34937	2783			15043								
		STD	2500	0321	3494	2784	0004602	1154	15054								
144		OBS	2866	0278	34934	2787			15099								
		STD	3000	0255	3493	2789	0003985	1368	15113								
144		OBS	T3126	0229	34915	2790			15123								



REFERENCE		SHIP CODE	LATITUDE ° ' /10	LONGITUDE ° ' /10	MARSSEN SQUARE	STATION TIME (GMT)				YEAR	ORIGINATOR'S		DEPTH BOTTOM	MAX. DEPTH OF S'AMPL'S	WAVE OBSERVATIONS				WEA- THER CODE	CLOUD CODES		NOCC STATION NUMBER	
CTRY CODE	IO. NO.					10"	1"	MO	DAY		HR./10	CRUISE NO.			STATION NUMBER	DIR.	HGT	PER		SEA	TYPE		AMT
31	549	EV	5730 N	05155 W	185	71	08	11	008	1965	LCE	9507	3470	35	15	7	2		X6	5	8	0099	
						WATER		WIND		BARO- METER		AIR TEMP. °C		VIS. CODE	NO. OBS. DEPTHS	SPECIAL OBSERVATIONS							
						COLOR CODE	TRANS. (m)	DIR.	SPEED OR FORCE	(mbst)	DRY BULB	WET BULB											
									15	S30	017	111	100	7	16								

MESSNGR TIME HR 1/10	CST NO.	CARD TYPE	DEPTH (m)	T °C	S %.	SIGMA-T	SPECIFIC VOLUME ANOMALY- $\sigma_t$	$\Sigma \Delta$ DYN. M. $\times 10^3$	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P $\mu\text{g} \cdot \text{ml/l}$	TOTAL-P $\mu\text{g} \cdot \text{ml/l}$	NO <sub>2</sub> -N $\mu\text{g} \cdot \text{ml/l}$	NO <sub>3</sub> -N $\mu\text{g} \cdot \text{ml/l}$	SiO <sub>4</sub> -Si $\mu\text{g} \cdot \text{ml/l}$	pH	STC
		STD	0000	0945	3454	2671	0013452	0000	14878	639							
008		OBS	0000	0945	34542	2671			14878	639							
		STD	0010	0880	3455	2682	0012415	0013	14855	647							
		STD	0020	0807	3457	2695	0011214	0025	14830	653							
008		OBS	0027	0750	34597	2705			14809	656							
		STD	0030	0712	3463	2713	0009470	0035	14795	657							
		STD	0050	0521	3477	2749	0006090	0051	14724	660							
008		OBS	0053	0502	34780	2752			14717	660							
		STD	0075	0452	3482	2761	0004983	0064	14700	657							
008		OBS	0080	0446	34824	2762			14699	656							
		STD	0100	0443	3486	2765	0004615	0076	14701	650							
008		OBS	0106	0441	34865	2766			14701	649							
		STD	0125	0430	3486	2767	0004474	0088	14700	650							
		STD	0150	0419	3486	2768	0004391	0099	14699	651							
008		OBS	0160	0415	34862	2768			14699	652							
		STD	0200	0406	3486	2769	0004298	0121	14702	661							
008		OBS	0213	0403	34864	2770			14703	663							
		STD	0250	0399	3486	2770	0004273	0142	14708	658							
		STD	0300	0391	3487	2771	0004230	0163	14712	653							
008		OBS	0319	0388	34865	2771			14714	652							
		STD	0400	0368	3486	2773	0004117	0205	14719	649							
008		OBS	T0427	0363	34855	2773			14721	648							
		STD	0500	0358	3486	2774	0004099	0246	14732	649							
		STD	0600	0353	3486	2774	0004131	0287	14746	650							
008		OBS	0639	0352	34863	2775			14752	650							
		STD	0700	0351	3487	2775	0004155	0329	14762	649							
		STD	0800	0349	3487	2775	0004193	0370	14778	649							
008		OBS	T0853	0348	34870	2776			14786	648							
		STD	0900	0347	3487	2776	0004237	0413	14794	650							
		STD	1000	0344	3487	2776	0004283	0455	14809	653							
008		OBS	1085	0343	34868	2776			14823	655							
		STD	1100	0343	3487	2776	0004352	0498	14825	655							
		STD	1200	0344	3487	2776	0004443	0542	14843	653							
		STD	1300	0345	3487	2776	0004532	0587	14860	650							
		STD	1400	0346	3488	2777	0004550	0633	14877	647							
		STD	1500	0347	3488	2777	0004639	0679	14894	644							
008		OBS	T1611	0348	34888	2777			14914	640							
		STD	1750	0348	3490	2778	0004700	0795	14937	631							
		STD	2000	0348	3492	2780	0004746	0913	14980	620							
017		OBS	2108	0348	34931	2781			14999	617							
		STD	2500	0323	3494	2783	0004645	1148	15055	617							
017		OBS	T2708	0302	34937	2785			15082	617							
		STD	3000	0265	3493	2788	0004134	1368	15117	624							
017		OBS	T3464	0185	34909	2793			15163	643							

REFERENCE CITY CODE	SHIP NO.	SHIP CODE	LATITUDE ° ' /10	LONGITUDE ° ' /10	MARS DEN SQUARE	STATION TIME (GMT)			YEAR	ORIGINATOR'S		DEPTH TO BOTTOM	MAX. DEPTH OF S'PL'S	WAVE OBSERVATIONS			WEA- THER CODE	CLOUD CODE		NODC STATION NUMBER
						10°	1°	MO DAY HR.1/10		CRUISE NO.	STATION NUMBER			DIR.	HGT	PER	SEA	TYPE	AMT	

31	549	EV	5630 N	05100 W	186 61	08	11	132	1965	LCE	9508	3525	34	17	5	2		X2	6 8		0100
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WATER		WIND		AIR TEMP. °C		BARO- METER (mba)		VIS. CODE		NO. OBS. DEPTHS		SPECIAL OBSERVATIONS	
COLOR CODE	TRANS. IM	DIR.	SPEED OR FORCE	DRY BULB	WET BULB	DRY BULB	WET BULB	DRY BULB	WET BULB	DRY BULB	WET BULB	DRY BULB	WET BULB
			29	S24	027	111	089	7	17				

MESSNGR TIME & HR 1/10	CARD NO.	CARD TYPE	DEPTH (m)	T °C	S ‰	SIGMA-T	SPECIFIC VOLUME ANOMALY-σ <sub>t</sub>	Σ Δ D DYN. M. x 10 <sup>3</sup>	SOUND VELOCITY	O <sub>2</sub> ml/l	PO <sub>4</sub> -P μg - ml/l	TOTAL-P μg - ml/l	NO <sub>3</sub> -N μg - ml/l	NO <sub>3</sub> -N μg - ml/l	SiO <sub>4</sub> -Si μg - ml/l	pH	SCC
151		STD	0000	0895	3458	2682	0012385	0000	14860	640							
		OBS	0000	0895	34582	2682			14860	640	051	085	012	045	002		
		STD	0010	0891	3459	2683	0012318	0012	14860	641							
		STD	0020	0887	3459	2684	0012243	0025	14860	642							
151		OBS	0026	0884	34591	2684			14860	643	062	111	020		009		
		STD	0030	0808	3461	2698	0010949	0036	14832	639							
		STD	0050	0534	3470	2742	0006762	0054	14728	627							
151		OBS	0052	0517	34710	2745			14722	626	100	117	016	139	010		
		STD	0075	0460	3475	2755	0005564	0069	14703	630							
151		OBS	0078	0454	34760	2756			14701	631	109	132	003	156	010		
		STD	0100	0427	3476	2759	0005196	0083	14693	638							
151		OBS	0104	0423	34759	2759			14692		120	149	011	154	012		
		STD	0125	0401	3476	2762	0004930	0095	14686	645							
		STD	0150	0383	3477	2764	0004734	0108	14683	648							
151		OBS	0155	0381	34769	2764			14683	649	120	151	006	151	013		
		STD	0200	0377	3480	2767	0004480	0131	14689	649							
151		OBS	0207	0376	34806	2768			14690	649	139	182	009	156	015		
		STD	0250	0374	3482	2769	0004345	0153	14696	649							
		STD	0300	0371	3484	2771	0004209	0174	14704	650							
151		OBS	T0311	0370	34842	2771			14705		120	130	004	162	011		
		STD	0400	0360	3486	2773	0004064	0215	14716	651							
151		OBS	0414	0359	34858	2774			14718	651	105	113	002	164	010		
		STD	0500	0363	3487	2774	0004074	0256	14734	648							
		STD	0600	0367	3488	2775	0004135	0297	14752	645							
151		OBS	0621	0368	34886	2775			14756		112	120	000	163	010		
		STD	0700	0363	3489	2775	0004139	0338	14767	642							
		STD	0800	0358	3488	2776	0004183	0380	14782	640							
151		OBS	T0828	0357	34882	2776			14786	639	118	125	003	163	011		
		STD	0900	0356	3488	2776	0004244	0422	14798	638							
		STD	1000	0354	3488	2776	0004303	0465	14813	636							
		STD	1100	0353	3488	2776	0004366	0508	14830	634							
		STD	1200	0351	3489	2777	0004415	0552	14846	633							
		STD	1300	0349	3489	2777	0004464	0597	14862	631							
151		OBS	T1350	0348	34886	2777			14870		121	127	002	158	012		
		STD	1400	0347	3489	2777	0004489	0641	14878	630							
132		OBS	1449	0346	34898	2778			14886		128	132	004	160	012		
		STD	1500	0347	3490	2778	0004491	0686	14895	628							
		STD	1750	0351	3492	2779	0004589	0800	14939	625							
132		OBS	T1904	0353	34932	2780			14966	623	134	140	004	151	013		
		STD	2000	0349	3493	2781	0004658	0915	14981	622							
132		OBS	2419	0325	34942	2784			15042		130	138	004	166	014		
		STD	2500	0321	3494	2784	0004566	1146	15054	618							
132		OBS	T2919	0287	34943	2787			15112	614	123	132	004	151	016		
		STD	3000	0278	3494	2788	0004258	1367	15123	617							
132		OBS	T3419	0220	34919	2791			15171	638	126	137	004	143	015		









